Multimedia Glosses

In

L2 Vocabulary Learning and Reading Comprehension

Abbas Ali Zarei,
Assistant Professor, Imam Khomeini International University, Qazvin, Iran

Pershing Oshnouie Mahmoudzadeh
M.A. Islamic Azad University, Takestan, Iran
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Chapter 1: Preliminaries

1.1. Introduction

Vocabulary has a critical role in learning a foreign language, in improving reading and listening comprehension and, above all, in communication. Many studies have provided evidence that seem to support the role of vocabulary in the mentioned areas. For example, Stahr (2009) investigated the role of vocabulary knowledge in listening comprehension and confirmed the positive role of vocabulary knowledge in successful listening comprehension in EFL. Furthermore, the role of vocabulary knowledge in reading comprehension is undeniable. In order to reach a perfect comprehension of a text, learners should have a good reservoir of vocabulary.

Given the important role of vocabulary in learning a foreign language, learners should employ suitable strategies and approaches to learn vocabulary. The more vocabulary knowledge learners have, the better comprehension takes place. There are different strategies for learning word meaning including guessing, inferring or direct teaching of words.

Hunt and Beglar (1998) hold that there are three approaches to improving vocabulary learning: incidental learning, explicit instruction, and independent strategy development. They state that among these three approaches, incidental vocabulary learning is regarded as an important part of learning vocabulary. Incidental learning
means learning vocabulary through reading (Sonbul & Schmitt, 2010). Incidental learning involves extensive reading and listening (Hunt & Beglar, 1998). Extensive reading provides learners with rich contexts that lead to vocabulary learning (Hong, 2010). Researchers have investigated incidental vocabulary learning through glossing (Hong, 2010; Yoshii, 2006). The impacts of L1, L2, and multiple glosses have also been surveyed by researcher (Farvardin & Biria, 2012; Hong 2010; Ko, 2005; Lomicka, 1998).

Glosses are used in the side or bottom margins for ‘unfamiliar’ words (Lomicka, 1998). Glosses are attractive for students with a high level of active role and interesting in the field of teaching (Zoi, Bellou & Mikropoulos, 2011). Nowadays, glosses are integrated with multimedia forms such as pictures, videos and sounds (Yoshii, 2006). This integration of glosses with multimedia, which is based on using computer software, attracts great attention and interest in the field of language instruction. “Multimedia is the use of text, graphics, animation, pictures, video, and sound to present information” (Najjar, 1996, p.129). Computer-based multimedia learning environments which include pictures and words provide an influential situation to improve students' understanding. (Mayer & Moreno, 2002).

As foreign language students are always faced with enormous difficulty in learning a new language, providing multimedia environment is being used as an effective way to facilitate learning a foreign language. Learning appears to take less time when
multimedia is used and computer based instruction leads to better organization and structure than traditional classroom lecture (Najjar, 1996).

In today’s society, because of advances in technology, there is a tendency to use computer-based programs to learn a second language. So, keying glosses into computerized reading may be helpful in this regard.

1.2. Statement of the problem

Most Iranian students in high schools and universities face a lot of problems in learning English as a foreign language. Many students are uninterested in studying current course books, because of their uninteresting plan and design, and many of them are confused as to how to start learning a foreign language. And this is because they do not have any distinct and suitable strategies in this regard. Teachers, also, because of time limitations, or because of an obligation in following the course books’ framework, cannot go beyond the course books and bring new and interesting materials into the classroom. As a consequence, the focus is on grammar. And this process of learning and teaching leads to a frustrating and boring classroom environment. In this environment, both teachers and learners have a passive role. The aim of this study is to investigate the impact of using computer and new technologies in classroom on English language instruction.
1.3. Research Questions and Related Hypotheses

The aim of the present study is to answer the following research questions:

1. Are there any significant differences among the effects of various multimedia glosses on L2 vocabulary production?

2. Are there any significant differences among the effects of multimedia glosses on L2 reading comprehension?

In line with the above research questions, the following null hypotheses are formulated:

1. There are no significant differences among the effects of various multimedia glosses on L2 vocabulary production.

2. There are no significant differences among the effects of various multimedia glosses on L2 reading comprehension.

1.4. Significance of the study

As an international language, English has an important and crucial role in every field of education. Therefore, it is logical to look for influential ways to improve our knowledge of English. Employing new techniques and strategies that are based on new technology and then implementing them in the curriculum, we can find a new and interesting way to cope with the difficulty of learning English in our schools. Computer-
based multimedia instruction may lead to basic change in curriculum and bring a new, different and attractive environment into our English classrooms than the traditional and boring classroom lectures. Also, by providing instructional CDs for students, we can provide them with an opportunity to have access to instructional materials at home. The present study aims at investigating the effect of multimedia glosses and computerized texts on learning English in our high schools. The findings of this study may be useful for textbook designers, teachers and learners.

1.5. Definition of the Key Terms

The key terms of the present study are defined as follows:

**Gloss:** glosses are definitions of words that are written in the margins or sides of a page. Glosses are substitution for dictionary (Yanguas, 2009).

**Multimedia gloss:** the use of different glosses such as picture, sound and definition of words is named multimedia glosses.

**CALL:** "CALL refers to the sets of instructions which need to be loaded into the computers for it to be able to work in the language classroom" (Gunduz, 2005, p.193).

**Vocabulary learning:** "in L2 lexical teaching and learning, there are two types of vocabulary learning: incidental learning and intentional learning. Incidental learning is defined as the type of learning that is a byproduct of doing or learning something else;
whereas, intentional learning is defined as being designed, planned for, or intended by teacher or students" (Yali, 2010,p.74). For the purpose of the present study, vocabulary learning is operationally defined as the participants' performance on a vocabulary test.

**Reading comprehension:** "the general reading skills include inferring the meaning of unknown words from context, awareness of text and arguments structure, distinguishing between main and peripheral information, between explicit and implicit material, etc"(Laufer&Kalovski,2010,p.15). For the purpose of the present study, reading comprehension is operationally defined as the participants' performance on a reading comprehension test.

### 1.6. Limitations and Delimitation of the study

There were a number of limitations in this study that should be mentioned. First, the materials for treatment had to include sufficient, concrete words that could be showed by pictures to fulfill the aims of the study. The treatment was about only vocabulary and reading comprehension; other skills such as, listening, writing, and speaking were not taken into account. So care must be exercised in generalizing the findings.

The participants were only female in this study, and were selected from high school students. This means that the findings may not be generalizable to male learners or learners at other levels of proficiency.
The number of participants was also limited for practicality reasons. This factor has to be taken into account in interpreting and generalizing the findings.
Chapter 2: Theoretical Review

2.1. Introduction

In this chapter the related studies about vocabulary learning and reading comprehension through using computer in multimedia environment will be reviewed. First, there will be a brief look at different vocabulary learning strategies and their effect on reading comprehension. Then, the history of CALL and multimedia glosses as well as their advantages and disadvantages in learning a second language will be summarized. Finally, the previous studies relevant to the present study will be briefly reviewed.

2.2. Vocabulary and different strategies

As one of the building blocks of any language, vocabulary has a crucial role in learning a new language. Learning a second language requires learning of large numbers of words (Laufer & Hulstijn, 2001). In order to be able to express your feeling or understanding your addressee, even in your first language, you should have a rich repertoire of vocabulary. Every successful and famous writer, speaker and teacher has a strong rhetoric, and it is due to their rich reservoir of vocabulary. But acquiring a vast number of words is one of the difficulties that L2 learners are faced with (Kim,
Accordingly, to cope with the difficulties of learning a new language and to find a suitable way to learn vocabulary items in the target language, it sounds reasonable to look for and try precious vocabulary learning strategies.

Gu (2010) avows that vocabulary learning strategies are very important for the development of lexical knowledge. He emphasizes the importance of environment in the improvement of language and refers to listening to teacher, taking notes in the classroom and memorizing vocabulary items outside the classroom as influential strategies in vocabulary learning. Wu's study (2005) shows that electronic dictionaries, bilingual dictionaries, and guessing from the context are the most common strategies. In the case of using dictionary, Koren (1999) states that dictionary use helps retention.

Matsuoka and Hirsh (2010) focus on the word repetition for vocabulary learning and maintain that this repetition has three variables: 1. the number of repetitions 2. spacing repetitions and 3. types of repetitions. Laufer and Hill (2000) emphasize the influential impact of repeated exposures to new words in language input for strengthening the language but state that there is no evidence to show how many repetitions are necessary.

Traditionally, having a notebook for L2 vocabulary items with their meanings and every day repetition and memorization was offered. This old strategy was called list learning (Baleghizadeh & Ashoori, 2010). But today, researchers are looking for new ways and techniques to facilitate language learning.
Sahandri, Kafipour and Abdullah (2009) refer to the following points about strategies of learning vocabulary:

First, any action employed by the learner to help the learning process of new vocabularies could be a vocabulary learning strategy.

Second, the employed action should improve the efficiency of vocabulary learning; otherwise, it is not regarded as a vocabulary learning strategy.

Third, learners may take such strategies that relate to their conscious action to learn new words.

Hunt and Beglar (2005) propose a framework to accelerate lexical development. This framework involves two approaches:

1. Explicit lexical instruction.
2. Implicit contextualized instruction.

They emphasize the role of extensive reading in improving their vocabulary building to advanced level.

Another important issue that should be taken into consideration is the vocabulary size of the learners (the number of words that they should know). Vocabulary size has an important role in the case of productive aspect of vocabulary knowledge (Yali, 2010) and in the case of comprehending a reading passage (Baleghizadeh & Golbin, 2010).
Coady (1997b, as cited in Hunt & Beglar, 1998, p.260) proposes that learners should learn 3000 most frequent words until the form and meaning of the words can be recognized.

2.2.1. Four ways of learning vocabulary

There are four types of vocabulary learning (Rashidi & Ganbari, 1385): incidental, intentional, implicit and explicit learning. Rashidi & Ganbari (1385) define implicit learning by the “lack of consciousnesses in learning a specific structure to be learned (p.115)”. Implicit learning is a gradual process and based on the repetition of form and process over a long period of time (Grabe, 2010).

Explicit learning means learning by direct communication of word meanings (Sonbul & Schmitt, 2009). Explicit instruction involves “identifying the words learners need to know, presenting the word for the first time, elaborating word knowledge and developing fluency with known words” (Hunt & Beglar, 1998).

Intentional vocabulary learning is intended learning of vocabulary (Koren, 1999). Yali (2010) defines intentional learning as concentrating on vocabulary and joining it with all kinds of “conscious vocabulary learning strategies and means of memorizing words” and incidental learning as a byproduct of learning or learning through texts, working on tasks or doing other activities that do not relate to vocabulary. In other
words, there is no need for conscious effort to learn words in incidental learning (Koren, 1999). Hulstijn, Hollander and Greidanus (1996), with regard to incidental learning, assert that:

Surely, many words must have been ‘picked up’ during listening and reading activities while the listener’s and reader’s goal was to comprehend the meaning of the language heard or read, rather than to learn new words. This ‘picking up’ is usually referred to as incidental learning (p.327).

Several studies (Hunt & Beglar, 1998; Yali, 2010) suggest that incidental learning is one of the most important strategies of learning vocabulary that involves extensive reading and listening. And it is accepted that children learn new vocabulary incidentally through listening and reading (Day, Omura & Hiramatsu, 1991). Yali (2010) states that although incidental learning is known as a good strategy for learning vocabulary, there are four limitations to this approach. The first limitation is the small number of words that can be learnt this way. In addition, the process of inferring meaning may not be error-free. The third limitation is that incidental learning is a slow process. Finally, this kind of learning may not necessarily result in viable long-term retention.

But according to many studies, most vocabulary learning occurs incidentally through extensive reading. (Day, Omura & Hiramatsu, 1991; Kweon & Kim, 2008; Sonbul & Schmitt, 2009; Webb, 2008).
In comparison with direct instruction, incidental vocabulary learning has the following advantages (Kweon & Kim, 2008):

a) Reading and word learning take place at the same time;

b) A word is learned through contextualized input strongly.

Hulstijn, Hollander and Greidanus (1996) mention three techniques that affect incidental vocabulary learning. One of the factors is marginal glosses; another one is using dictionary; and the third one is the repetition of new words.

Using various kinds of glossing based on their different forms, positions and languages (Zarei & Hasani, 2011) is one of the newest techniques in second language learning. Glosses that provide definition for difficult words can be in the form of L1 glosses, L2 glosses and computer-based glosses or multimedia glosses. L1 glosses provide the definition of hard words in first language, L2 in second language and multimedia glosses have various forms, such as pictures, text, context and audio forms.

It is clear that none of these vocabulary learning techniques can be influential alone. There are different arguments about their impact on vocabulary learning. For example, according to Yali (2010), a combination of intentional and incidental learning instruction is crucial for vocabulary learning and their retention; likewise, Sonbul and Schmitt (2009) claim that the combination of explicit and incidental approach is effective for teaching foreign languages. On the other hand, a number of studies confirm
the influential role of glossing (Jones, 2004; Ko, 2005; Lomicka, 1998). Because glossing makes words more salient, it can attract learners' attention and motivate them to learn in a new way. According to the task-induced involvement theory of Laufer and Hulstijn (2001), attention is one of the main factors in vocabulary learning. They claim that attention, motivation and association are three important factors in vocabulary development. That is, more attention to the formal and semantic aspects of words and associations which are made based on the similarities and contrasts between new and old information leads to better retention of new information. And it is clear that learners with high motivation and intrinsic tendency to learn will achieve higher improvement. In the process of using this technique learners are allowed to look at the glossed words as many times as they want. This frequent exposure engages learners in the process of learning and leads to a deep learning. And according to the depth of processing theory of Graik and Lockhart (1972) the chance of storing new information in long term memory depends on the depth of processing during learning. Consequently, glosses can attract and motivate learners and engage them in the process of learning. In a linear relationship between vocabulary and reading comprehension, consolidation of vocabulary in mind leads to better comprehension.
2.3. The effects of vocabulary on reading comprehension

There is a strong relationship between vocabulary knowledge and reading comprehension (Matsuoka & Hirsh, 2010). Vocabulary has an intriguing and complex role in reading comprehension (Baleghizadeh & Golbin 2010) and learners can learn target vocabulary through reading (Day, Omura & Hiramatsu, 1991). Second language acquisition depends on the development of a strong vocabulary (Sahandriet.al, 2009). There is a significant correlation between vocabulary size and reading comprehension (Baleghizadeh & Golbin, 2010; Laufer & Kalovski, 2010; Yali, 2010).

A proficient reader should have a rich reservoir of vocabulary to comprehend any text. Coady (1997b as cited in Hunt & Beglar, 1998, p.260) points to the beginners' paradox and wonders how beginners can "learn enough words to learn vocabulary through extensive reading when they do not know enough words to read well". Strong readers have more decoding skills and larger sight vocabulary than weak readers (Pulido, 2003).

The end goal of reading is comprehension (Ouellette, 2006; Vaezi & Fallah, 2010). For comprehension of a text and decoding it we need to rely on vocabulary knowledge. Both breadth and depth of vocabulary knowledge influence reading comprehension (Ouellette, 2006). Breadth of vocabulary refers to the number of known words, and depth of words refers to how well the meaning is known (Matsuoka & Hirsh, 2010). Small growths of vocabulary knowledge develop reading comprehension even though
they hardly improve text coverage (the percentage of words that a reader knows) (Laufer & Kalovski, 2010). Consequently the more vocabulary knowledge the learners have, the better comprehension takes place. Besides learning vocabulary, as a main factor for reading comprehension and as reading is a complex cognitive skill, readers must have suitable strategies to comprehend a text (Pulido, 2003). Some strategies that may have positive effect on reading comprehension include recognizing conjunction relationships such as cause-effect, guessing the meaning of unknown words from the context, and predicting probable content (Macalister, 2010) or reading aloud by the teacher (Amer, 1997). Finding the main messages (e.g., summarization), and using text enhancements (e.g. illustrations, text structure representations, and mental images), question and answer drills (e.g., self questioning, meta-cognition (e.g., comprehension monitoring) are important strategies for reading (Sung, Chang & Huang, 2008).

Extensive studies also improve reading comprehension (Brown, 2009; Green, 2005). Extensive reading means reading as much as possible and reading material at an enjoyable and comfortable level for the learners, for example using graded readers (Brown, 2009). Extensive reading that is done in interactive mode helps the negotiation of meanings in the texts prevents the fossilization of interlanguage structures and gives learners the ability of debating (Green, 2005).

Vocabulary can be recalled better during reading by the active, constructive elaboration of the word-meaning complex during acquisition (Lawson & Hogben, 1996).
Psychologists seem to support the view that elaboration on features of new words facilitates their retention (Laufer & Hulstijn, 2001). Lawson and Hogben (1996) claim that successful learners make a network of meaning not only by analyzing and rehearsing but also by elaborating the word-meaning complex, and this elaboration makes the new word available for use. Hence, with regard to the strong relationship that exists between vocabulary and reading comprehension, it seems reasonable to find some strategies to learn vocabulary through reading. In other words, it is important to provide efficient input. Ko (2012) states that learners should notice a form in the input in order to process the input further and convert it to intake. He refers to glossing as an influential way to make words salient. There are several studies that confirm the positive role of glossing in vocabulary learning and reading comprehension (Farvardin & Biria, 2012; Hong, 2010; Ko, 2005; Lomicka, 1998; Yoshii, 2006). Hong (2010) claims that there are different approaches to enhance incidental vocabulary learning such as oral context, using dictionary, doing some context-based exercises, guessing, and using marginal glosses. To some extent, glossing incorporates most of the influential factors in vocabulary learning that were reviewed earlier. Glossing attracts students' attention. Attention and noticing are the main factors in vocabulary acquisition (Groot, 2000; Laufer & Hulstijn, 2001). Glossing is an effective way for incidental vocabulary learning through extensive reading. And finally it provides learners with an opportunity for frequent exposure.
2.4. Types of Glosses

Yoshii (2006) states that we should focus on which gloss type is the most effective. Early glosses were interlinear or marginal scribbling which were learner-generated (Hullen, 1989 as cited in Roby, 1999). Teacher-generated glosses came later (Roby, 1999). According to Zarei and Hasani (2011) there are different categorizations of glossing based on form, position and language. They point out another categorization of glossing as follows: a) single versus multiple-choice glosses, b) meaning inferred glosses versus meaning given ones.

Roby (1999) has a taxonomy of glosses based on six features. 1. Gloss authorship that is divided into glosses which are generated by learners or professionals. Professionals may be instructors or material developers. 2. Gloss presentation involves priming glosses or prompting glosses. 3. Gloss functions include procedural function (metacognitive, high lighting and clarifying) and declarative function (encyclopedic and linguistic). The linguistic subset of declarative functions is divided into lexical function (signification and value) and syntactical function. 4. Gloss focus which has to do with textual or extra textual materials. 5. Gloss language includes L1, L2, and L3. 6. Gloss form involves verbal, visual (image, icon, video with or without sound) and audio form.

There are many empirical studies that show the different effects of different glosses. For example, Farvardin and Biria (2012) found that MCG (multiple choice glosses) makes lexical retention easier than other gloss types (single gloss in first language and single
gloss in second language). Yoshii (2006) claims that there is no difference between L1 and L2 glosses for vocabulary learning and both of them have a positive role in vocabulary learning and reading comprehension. Traditionally, glosses were confined to printed glosses at the bottom or in the margin of pages. This is referred to traditional glosses here.

2.5. Traditional Gloss

Glosses are used as a technique for vocabulary learning and better comprehension. They are a substitute for the dictionary (Yanguas, 2009). "Glosses are many kinds of attempts to supply what is perceived to be deficient in a reader’s procedural or declarative knowledge" (Roby, 1999, p.96). The concept of glossing dates back to the Middle Ages and traditionally was referred only to a short definition or note to facilitate reading comprehension (Lomicka, 1998). Providing an L1 or L2 definition for words is a traditional way of glossing (Chun & Plass, 1996). But glosses can be beyond just translations or explanations of hard words (Roby, 1999).

Glosses can be used as a strategy for learning vocabulary, and many researchers have consensus that glossing is an influential approach for improving vocabulary learning (Farvardin & Biria, 2012; Hong, 2010; Ko, 2005; Lomicka, 1998). As Yoshii (2006) states, glosses enhance incidental vocabulary learning in comparison with non-gloss condition.
2.6. Gloss and Reading Comprehension

There are a number of studies about the effect of glossing on reading comprehension. Glossing, as a type of input modification, facilitates vocabulary learning and reading comprehension (Ko, 2012). Glossing makes L2 reading more effective (Chen & Good, 2009). It assists reading comprehension by providing additional information, such as definition and synonyms (Ko, 2012). Lomicka (1998) investigated the effect of glosses under three conditions: full glossing, limited glossing, or no glossing. She confirms that full glossing may promote a deeper level of text comprehension. Ko (2005) also investigated the effect of different kinds of glosses (no gloss, L1glossing, L2 glossing using qualitative and quantitative measures) on reading comprehension. He found that L2 glosses were more influential than L1 glosses.

Glosses act as a mediator between text and the learner by providing additional information about difficult words and facilitate both reading comprehension and vocabulary learning (Ko, 2005). There are many advantages for glosses in learning a new language, according to Hong (2010):

The presence of gloss can reduce students’ burden of dictionary consultation, avoid the interruption of reading process and prevent learners from making wrong inference for the unknown words in the particular context. Thus, gloss can not only ensure learners’ exact understanding of the text but also help learners know the meaning of the new words (p.68).
Nagata (1999) points to four advantages of marginal glosses. 1. Using marginal glosses is easier than using dictionary. 2. They motivate learners to notice and attend to target words based on the notion of consciousness-raising and input enhancement. 3. Contribution to the meaning-form connection by connecting word to meanings is another advantage of it, and 4. they trigger learners to do lexical processing by frequent referring to target word and glosses, and this helps the retention of words. Likewise, Ko (2005) enumerates four advantages for glossing:

First, glosses can help readers know new words better by preventing wrong guessing.

Second, glossing may lessen interruption during the process of reading.

Third, glosses can help readers to create a relationship between prior knowledge and new information in the text.

Fourth, glosses allow readers to become more autonomous with less dependence on their teacher. In addition, they do not interrupt the reading process since the definition is easily available in the text (Yanguas, 2009). Furthermore, Koren (1999) avows that glossing is the easiest way to learn the meanings of words when they are in context, but he refers to some disadvantages of using glossary as follows:

1. Glossary has to be prepared by the teacher, or written for each text, or found in specific text books, contrary to the use of dictionary that can be done independently by the students.
2. A reader who depends on a glossary is not likely to become an independent reader, and s/he always needs a text prepared for them; so glossary can be a stage in the learning process.

3. There is no evidence to confirm that using glossary leads to the retention of word meaning.

   Based on the reviewed studies, the positive effect of glossing is evident and because its advantages overcome the disadvantages, we can get help from it in language learning. Given the positive role of glossing and given the increasing use of new technology in teaching, there is a tendency to base glossing on the ground of computer to facilitate vocabulary learning and reading comprehension. There seems to be more attraction and fascination in using the computerized texts and teaching. Teaching second/foreign language based on computer is called CALL, a brief review of which follows.

**2.7. CALL and its History**

   By integrating computer and multimedia technology into the field of language learning, Computer-Assisted Language Learning (CALL) emerged (Hong, 2010). CALL or computer-based instruction opens a new way for learning language.

   According to Gunduz (2005), computers have been used for education in developed countries in the late 1950s, and the advent of CALL dates back to the 1970. CALL is one
powerful method for increasing language learners’ vocabulary size because of its capacity for multimedia presentation of glossing annotation (Yeh & Wang, 2003). According to Gunduz (2005), "CALL refers to the sets of instructions which need to be loaded into the computers for it to be able to work in the language classroom" (p.193). With the development of information technology, computers are used as assistants for teachers and a substitute for chalk and blackboard instruction.

According to Warschauer and Healey (1998), there are three phases in the development of CALL 1. Behaviouristic CALL, implemented in the 1960s and 1970s, was based on behaviorist theories of learning and teaching and emphasized habit formation and focused on the practice of language patterns. That is why it was also referred to as drill and practice.

2. Communicative CALL emerged in the late 1970s and early 1980s. It was based on cognitive psychology, rejected the behaviorist theory theoretically and pedagogically and emphasized creative language use and communication.

3. Interactive CALL emerged in the late 1980s and early 1990s, was based on more social and socio-cognitive views, and placed greater emphasis on language use in authentic social contexts.

CALL has advantages and disadvantages in language instruction. CALL or CALT has positive impact on learners and leads learners towards autonomy (Hai-peng & Li-jing, 2008).
Some advantages of incorporating computers in reading instruction, according to Sung, Chang and Huang (2008), include:

1. Providing immediate individual feedback based on student’s learning conditions.

2. Controlling the pace of learning by learners themselves.

3. Relieving teachers from some of the burden and giving students more opportunities to learn independently.


Jing-hua (2009) refers to the following implications of CALL for vocabulary teaching:

1. Combination of incidental and intentional vocabulary learning.

2. Modifying vocabulary teaching method under CALL environment.

3. Making vocabulary learning a dynamic process.

On the other hand, some disadvantages of using computers, according to Gunduz (2005), include:
1. There is the possibility of wasting time by inexperienced students.

2. Computers prevent normal communication between learners.

3. Computers are not suitable for all class activities.


5. Computers cannot run open ended dialogs and cannot give feedback to open ended questions.

Despite the above mentioned pitfalls, computers can be used in many fields of language instruction. A new outlook for language teaching and learning as well as vocabulary acquisition is provided by using CALL (Tabatabaei & Shams, 2011).

Hai-peng and Li-jing (2007) note that it is important for students to develop their own vocabulary strategies and enhance their learning by extensive reading. They identify the following vocabulary strategies in CALL environment:

1. CALL for vocabulary pronunciation, morphology and semantics: that is, by multimedia technology, we can learn a word through sound, picture and three dimensional animations.

2. Learning a word in context is a useful way to learn the semantic and collocational features of a word.
3. Vocabulary game is an influential way for learning and the results are twice as good with half the effort.

With the entrance of computer into the language curriculum, there is an opportunity for teachers and book designers to base their instructional materials and programs on computers by consuming less time and energy and more efficiency.

2.8. Multimedia Gloss

"Multimedia usually refers to the capacity of computers to provide real-time representation of nearly all existing media and sensory modes of instruction" (Clark & Feldon, 2005, p.3). A multimedia explanation involves words and pictures that provide a cause-and-effect account of how a system works, and in a cause and effect system a series of interacting parts exist (Mayer & Chandler, 2001). Brett (1995) defines multimedia as the computer based program of video, audio, written text, graphics and integration of these media for second language learning. Generally speaking, "multimedia is the use of text, graphics, animation, pictures, video, and sound to present information" (Najjar, 1996, p.129).

In a multimedia environment through which some annotated computerized texts are presented to learners, multimedia learning takes place (Mayer, 1997). Mayer and Moreno (2003) define multimedia learning as "learning from words and pictures" and
define multimedia instruction as "presenting words and pictures that are intended to foster learning" (p.43). In the same way, Mayer (1997) states that multimedia learning occurs when information is presented in more than one mode, such as pictures and words. Lin and Chen (2007) note that "instructional materials developed using multimedia are believed to be able to facilitate learners' information processing, and to enhance effective cognitive encoding due to the multiple representations that trigger both visual and verbal modes of processing in human beings" (p.83). Given the positive impacts of visual and verbal representation of instructional materials, it seems reasonable to use new technologies like computer-based instruction and multimedia glosses. By integrating glosses into computers program, multimedia glosses emerged. “Electronic or digital glosses are mainly vocabulary annotations in multimedia or hypertext that present information about a specific word in the text and appear on the same screen as the text” (Zoi, Bellou, & Mikropoulos, p.54). Ben Salem and Aust (2007) state that more exposure to computerized glosses leads to better comprehension of new words.

It is important to know how instructional technology like multimedia can aid language learning. Mayer (1997) believes that " in computer-based multimedia learning environments students have the opportunity to work easily with both visual and verbal representations of complex systems; but to fruitfully develop these potential educational opportunities, research is needed in how people learn with multimedia" (p.17). In this regard there is a brief review of cognitive theory of multimedia instruction. The
cognitive theory of multimedia instruction is based on the dual coding theory and generative theory. Dual coding theory of Clark & Paivio (1991) states that cognition involves two subsystems, a verbal system and a nonverbal system. The verbal system deals directly with language and nonverbal system deal with nonlinguistic events. In this theory, cognitive processing takes place within two verbal and visual systems. That is, learners have a better process of learning when they use both verbal and visual systems simultaneously than when the words are coded in a single manner. Mayer and Moreno (2002) state that:

The rational for simultaneous presentation is based on the cognitive theory of multimedia learning, and its assumption that meaningful learning occurs when students are able to make connections between corresponding visual and verbal representations in working memory. Learners are more likely to be able to hold corresponding visual and verbal representations in working memory at the same time when the animation and narration are coordinated in time (p, 113).

Likewise Mayer and Sims (1994), state that students will make better referential connections when both verbal and visual materials are presented continually than when they are presented separately.

In multimedia environment, instructors can draw on this theory and use two or more verbal and visual modes and engage learners' minds into a deep processing of materials. Based on this theory, Mayer and Moreno (2002) state that:
The visual channel takes input from the eyes and ultimately produces pictorial representations; the verbal channel takes input initially from the ears and ultimately produces verbal presentation (p.110).

Another theory which draws on Clark & Paivio's dual coding theory is generative theory of Mayer (1997). This theory is based on the idea that multimedia instruction should be based on meaningful learning. In this theory, the learner is seen as a 'knowledge constructor' who selects and connects some parts of visual and verbal knowledge. The design of multimedia environment influences the degree of the learners’ engagement in the cognitive processes that are required for meaningful learning within the visual and verbal information processing systems. Meaningful learning occurs when the learner at first step pays attention to relevant aspects of visual and verbal information received through eyes or ears; this step refers to the selection of related materials and entering it to working memory. In the second step, learners organize the selected materials in a coherent way. In the final step which is called integrating step, learners make connection between verbal based model and visual based model.

2.8.1. Types of Multimedia Gloss

Nowadays, glosses are not limited to only verbal forms. They are integrated with multimedia forms such as pictures, videos, and sounds (Yoshii, 2006). There are different kinds of multimedia glosses, such as textual, visual, both textual and visual, or
auditory (Yanguas, 2009). In line with Yanguas (2009), Chun and Plass (1996) state that annotations can be provided through text, pictures, videos and sound. Any learning that takes place in a multimedia environment relates to the type of annotations processed and the depth of experience with them (Jones, 2004). Hence, it is important to investigate which types of multimedia glosses have the most impact on the process of language learning in general and on vocabulary learning and reading comprehension in particular.

Mayer (1997) distinguishes among delivery media, presentation mode, and sensory modalities. He defines delivery media as:

- The system used to present instruction, such as a book-based medium versus a computer-based medium. Presentation modes refer to the format used to represent the presented instruction, such as words versus pictures and modality refers to the information processing channel that a learner uses to process the information such as acoustic verses a visual information processing (p.1).

So, it is concluded that system, format and information processing channel are three important factors for presenting Instruction in a multimedia environment.
2.9. How does Multimedia Gloss affect the Instructional Environment?

In comparison with the traditional approach to language instruction through chalk and blackboard and a teacher-centered classroom, teaching contextualized vocabulary in multimedia environment increases learners’ attention and motivation and provides learners with a way to relieve them from the limitation of text-books and teachers from the burden of teaching. An important feature of multimedia environment is that it deals with learners’ attention. Groot (2000) has introduced noticing as the first stage in vocabulary learning. Laufer and Hill (2000) claim that close attention refers to deep processing, elaboration, or cognitive effort. They emphasize the role of attention to input in the sense of 'noticing' in second language vocabulary learning. And glossing plays a main role in attracting learners' attention and increasing the possibility of noticing. Glosses attract the attention of all active learners and are an interesting method of teaching (Zoi, Bellou, & Mikropoulos, 2011). Al-Seghayer (2001) notes that computerized gloss is attractive and does not interrupt the reading process because the glossed item is hidden until the reader clicks on the target word. He states that the effect of computerized glosses is because of "the availability of different types of information, the absence of interruptions during reading, the generation of casual-inferences, and the construction of a situation model"(p.207). Therefore, multimedia glosses as a new technology can be integrated into the process of learning a new language. There are many studies that support the positive role of multimedia glosses in listening, vocabulary learning and reading comprehension.
Brett (1997, 1995) found that listening in multimedia environment caused higher levels of comprehension and language recall. Also, Jones and Plass (2002) studied the impact of listening with multimedia annotations and found that students had better functions with computer-based multimedia listening instruction.

Using glosses leads to learner-text interaction and results in better comprehension of the main idea of the text (Rott & Williams, 2003). According to Al-Saghayer (2001), computerized glossing affects vocabulary acquisition in particular and reading comprehension in general. Computerized reading with full glossing may cause a deeper level of text comprehension (Lomicka, 1998). Furthermore, incorporating CALL into vocabulary learning is a dynamic process which results in learning from both audio and visual programs (Jing-hua, 2007).

Najjar (1996) enumerate the following advantages of learning by computer-based multimedia instruction:

Computer-based multimedia instruction is more interactive in comparison with traditional classroom lectures. Control of learning pace is another advantage of this kind of instruction because the learner can move to new material whenever he is ready. In addition, information provided by multimedia instruction is more novel than information provided by traditional classroom lecture. In line with Najjar (1996), Hong (2010) points out to some advantages of multimedia learning. Firstly, using computer promotes learners’ interest and they are motivated to read more in an enjoyable and comfortable
situation. Secondly, multimedia encourage learners to become more autonomous and less dependent on their teachers. Shahrokni (2009) also states that using multimedia gloss is a learner-oriented technique that helps learners and facilitates reading comprehension. In addition, it is useful for learners without dictionary and library search skill. Thirdly, in this environment, information is conveyed quickly and effectively to all students and learners' concentration and interest are increased. Furthermore, there is a learner-text interaction with a more active role of learners. Fourthly, learners can experience materials instead of acquiring them. And lastly, learners learn technical and research skills which cannot be gotten from reading a textbook. In line with Hong (2010), (Zoi, Bellou, & Mikropoulos, 2011) confirm the active role of learners in multimedia environment because of the immediate feedback offered by computer-based programs. Besides, they emphasize the role of the teacher as a facilitator of the teaching, collaborator and intervener.

Likewise, Brett (1995) refers to the advantages of multimedia-based language learning tools as follows:

1. Combination of media: it is possible for learners to select a combination of tasks, subtitles, video or audio according to their preferences and learning styles. The combination of different media provides more comprehensible input and increases the possibility of input turning into intake.
2. Quantity of content: different ways of providing information in and through the content make learning experience generalizable to learners.

3. Computer power: it is easy to access the video materials. And this motivates learners to learn.

4. Degree of learner control: using computer provides the opportunity for learners to select and control their way of learning.

5. Economy: instructional programs through computers cost less than teacher hours. It is a reusable, replayable resource.

6. CALL for skill work: CALL can be used as a provider of learning experiences that are based on current ideas about good pedagogy.

7. Motivation: this program is more attractive for learners than the combination of books, tapes and videos. This is because using this program is novel and provides opportunity for further investigation.

It is important to note that pedagogic materials are put forward through computers in a standard approach and in accordance to learners' personal differences. Individual differences are an important factor in studying L2 text comprehension in multimedia environments. Al-Saghayer (2005) states that most of the learner variables that affect learning in general and second language reading comprehension in particular are verbal and spatial abilities, visualize and verbalizer preferences and background knowledge.
Since various glosses do not influence learners in the same way, Al-Seghayer (2005) recommends that with respect to different glosses, pictorial, textual, vocal and contextual, individual differences be taken into consideration. He believes that researchers should focus on strategies that readers use in different reading contexts instead of the product of reading.

Najjar (1996) states that one reason for using multimedia instruction may be the assumption that it helps people learn. He identifies specific situations in which multimedia information may help people to learn:

"a) When the media encourage dual coding of information
b) When the media support one another
c) When the media are presented to learners with low prior knowledge or aptitude in the domain being learned" (p.129).

Many studies support the positive effect of multimedia annotations on vocabulary acquisition (Chun & Plass, 1996; Rott & Williams, 2003; Sung, Chang & Huang, 2008; Yeh & Wang, 2003). Kim and Gilmann’s study (2008) revealed that the use of visual media and combination of visual text with graphics are very helpful in vocabulary acquisition. Yeh and Wang (2003) compared text, text-picture and text-picture-sound, and found that text-picture gloss was the most effective type of vocabulary annotation. Chun and Plass (1996) surveyed the effect of video-gloss and the text-picture gloss and
found evidence suggesting that picture-text annotated texts were more effective than video-text or text only. But Al-Seghayer (2001) concluded that a video clip, because of a better building of mental image, was more effective in teaching unknown words. Rott and Williams (2003) confirm the positive role of glossing in better comprehension of the text. But they believe that text comprehension does not always lead to long-term retention.

However, Rott and Williams (2003) refer to some arguments against glossing. They avow that inferred meanings are retained in memory longer than meanings provided by glosses. They argue that this view is based on the mental effort hypothesis, which claims that inferring requires mental effort and that the greater the mental effort, the better a learner's recall and retention of information acquired through that effort.

2.10. Previous Studies

A number of studies have investigated the effects of different glosses on vocabulary learning and reading comprehension. Some of these studies have been selected and discussed here.

Investigating the effect of multimedia annotations on vocabulary acquisition, Chun and Plass (1996) conducted a study with 160 university German students. The participants read German texts which included a variety of annotations for words such as
text definitions, text-picture and text-video. They conducted three studies and used within-subjects design. That is, the students used the same version of the program and worked with the program in a realistic L2 learning situation. The result showed that picture-text annotations had the most effect on incidental learning.

Brett (1997) tried to investigate the effects of multimedia on listening comprehension. Three different media including audio, video, and multimedia were used for the study. He selected 49 learners to complete audio and video comprehension and language recall tasks and 43 learners for multimedia comprehension and language recall tasks. The result revealed that using multimedia leads to more comprehension and recall than audio or video plus pen and paper.

Investigating the impact of multimedia glosses on reading comprehension, Lomicka (1998) conducted a study with 12 students. The participants were divided into three groups, each included four participants. The first group read the text with no glosses, the second group with access to traditional glosses and the third group read the text with access to all glosses (definition in French, images, references, questions and translations in English). The result indicated that full glossing of computerized texts causes a deeper level of text comprehension.

Nagata (1999) focused on the effectiveness of two types of glosses, single glosses and multiple-choice glosses as used in a Japanese courseware program. The single gloss version of the program provides a single English translation for each target word or
target grammatical structure in the reading text. The multiple-choice version provides two possible translations in multiple-choice format followed by immediate feedback to learners' selections. The results indicated that multiple-choice format is more effective than the single-gloss format. Furthermore, multiple-choice glosses were shown to encourage deeper lexical processing.

Al-Seghayer (2001) investigated the impact of dynamic video and still picture on vocabulary learning. The participants included 30 ESL students (17 males and 13 females). They were divided into 3 groups. One group was taught with printed text definition alone, the second group with printed text definition coupled with still pictures, and the third group, the printed text definition with video clips. He concluded that a video clip is more effective than still pictures. And this is because video is better in building a mental image, in creating curiosity, leading to more concentration. He also concluded that a combination of modalities facilitates recall.

Jones and Plass (2003) carried out a study to examine how multimedia environments can enhance the process of listening comprehension. Also, they surveyed the effects of written and pictorial annotation on learning vocabulary when learners listened to an aural L2 passage. The participants consisted of 171 students, including 59 males and 112 females. All of the students were nonnative speakers of French and fluent in English. They were divided into four treatments of the listening text: a) with no annotation b) with only written annotations c) with only pictorial annotations d) with both written and
pictorial annotations. The result indicated that written and pictorial annotations were better for translation and recalling the passage.

Yen and Wang (2003) measured the effectiveness of three types of vocabulary glosses on vocabulary learning of EFL college students in Taiwan. The glosses included: text, text-picture and text-picture-sound. 82 freshmen participated in this study. The result of the study indicated that text-picture annotation was the most effective type of vocabulary annotation. Furthermore, they confirmed that perceptual learning styles did not have a significant effect on the effectiveness of vocabulary annotations.

Jones (2004) conducted two studies to examine the effects of pictorial and written annotations on second language vocabulary learning in multimedia environment, with 80 participants. There were four aural multimedia groups: a control group that received no annotations and three treatment groups with written annotation, pictorial annotation and written-pictorial annotation while listening. In the first study, the treatment groups outperformed the control group without annotations, in the second study, participants performed better when the mode of testing matched the treatment mode.

Ko (2005) investigated the effect of different types of glosses on Korean college students' reading comprehension. 106 undergraduates at a university in Korea participated in the study. The students were freshmen studying liberal arts or social sciences. The participants were divided into two groups. 12 were assigned to think aloud protocol (they were selected for qualitative study) and 94 took part in the main study.
(for quantitative study). The participants received materials under one of three conditions: no gloss, L1 gloss in Korean language and L2 gloss in English language. The qualitative study showed that L2 glosses had a positive effect on reading comprehension and the quantitative study indicated that both types of glossing facilitate reading comprehension are better than the no gloss condition.

Using a think-aloud procedure, Rott (2005) examined why certain vocabulary interventions are more facilitative for word learning than others. The participants read a text enhanced with either multiple-choice glosses (MCGs) or single-translation glosses (STGs). The result revealed that multiple-choice glosses lead to stronger lexical form-meaning connections than single-translation glosses.

Yoshii (2006) examined the effect of L1 and L2 glosses on incidental vocabulary learning in multimedia environment. The participants included 195 students from 2 universities in Japan. They were freshmen, 29 sophomores, and 36 junior who were studying English as a foreign language. The participants were instructed under four types of gloss conditions: L1 text only, L2 text only, L1 text plus picture and L2 text plus picture. The result of the study showed the following results: both L1 and L2 glosses are useful for enhancing learners' incidental vocabulary learning. Furthermore, the effectiveness of L1 and L2 glosses may differ over time and also according to the kinds of used instruments. Finally, the L1 text-only group outperformed other three groups in remembering words.
Lin and Chen (2007) explored the effects of visualization and advance organizers on authentic texts in a multimedia environment. They did their study with 115 sophomores (20 males and 95 females) from two EFL reading sections. The participants were nonnative students without any experience of studying or living in any English-speaking countries. They were divided into four computer-based instruction groups: static visual alone, animation alone, animation plus descriptive advance organizer and animation plus question advance organizer. The materials included 1,821 words presented in 20 pages. There were two stages in their study. In the first stage the students were provided with readings in which the content was relevant to the material used in the study. The readings were simplified in terms of the level of difficulty in vocabulary and content. The second stage was performed in a multimedia language lab during class hours. The results showed that animation group performed better than the static visual group in one of the four tests. In general, the result of their study indicated that dynamic visualization was no more effective than static visual.

Kim and Gilman (2008) carried out an experiment to investigate the use of multimedia components such as visual text, spoken text and graphics in a web-based self-instruction program. They selected 172 middle school students and divided them into six groups that involved: group A: visual text, group B: visual text and added spoken text, group C: visual text and added graphics, group D: visual text and added graphics and added spoken text, group E: reduced visual text and added spoken text. And group F) reduced visual text, added graphics and added spoken text. The result
indicated that visual media in particular graphics, to illustrate definition was the best way of vocabulary learning, because text alone was not usually translated in a meaningful way to the learners. But graphics provided an opportunity for learners to visualize the definition in a more meaningful way.

Sung, Chang and Huang (2008) carried out a research to investigate the effects of computer-based instruction on reading comprehension with 65 sixth-grade students in the experimental group and 65 students in the control group. In their study, they used the attention-selection-organization-integration-monitoring (ASOIM) model, a revised form of SOI model of Mayer's. CASTLE system is used to evaluate learners' reading abilities. The results indicated that CASTLE helps students to improve the use of strategies and text-comprehension. In their study, the experimental group outperformed the control group in reading comprehension and using prior-knowledge integration strategy in narrative but not in expository articles. Furthermore, students of low reading ability performed better than students with high reading ability in summarizing narrative articles.

Cheng and Good (2009) explored the effects of 3 types of glosses: first language Chinese glosses plus second language English example sentences, L1 in-text glosses, and L1 marginal glosses on reading comprehension and vocabulary learning. 135 undergraduate business and engineering students at four proficiency levels participated in the study. Their study involved three phases. Two unexpected delayed vocabulary
recall tests were organized after the first phase of the experiment. The first phase consisted of: a) pre-test of vocabulary b) reading a text c) post-test and d) a questionnaire about vocabulary gloss used for all subjects. In the second phase, one week after reading, the first delayed vocabulary recall test was administered. The third phase was the second delayed vocabulary recall test, two weeks after reading. The result showed that all the three experimental gloss conditions helped vocabulary retention, but they did not facilitate reading comprehension. Furthermore, they showed that L1 glosses facilitate learning words and reviewing the learned words. However, between the first and second delayed recall tests, a little increase in retention was observed.

Al- Jabri (2009) carried out a study to examine the effect of different gloss conditions on reading comprehension and idea recall. For this purpose, 90 second-year male English department undergraduate Saudi students were selected and divided into three conditions: L1 gloss (Arabic), L2 glosses (English) and no gloss. Results of the study showed that L1 gloss group performed better than L2 gloss group in reading comprehension. In addition, results of the recall protocol indicated that L1 gloss group and no gloss group recalled more ideas than L2 gloss group.

Shahrokni (2009) carried out a study to investigate the impact of online textual, pictorial and textual-pictorial glosses on incidental vocabulary learning. 90 adult elementary level Iranian EFL learners were selected and divided into three groups of 30 members. The participants were exposed to the treatment under three conditions; the
first group with textual gloss, the second group with pictorial gloss and the third group with textual-pictorial gloss. The results showed that the combination of text and still picture had better impact on incidental vocabulary learning.

Yanguas (2009) investigated the effects of different multimedia glosses such as textual, pictorial and textual-pictorial glosses on vocabulary learning and text comprehension. His study was based on the theoretical framework of attention. 94 students of a small private university participated in this study. He used an internet-based passage from an online newspaper. The participants were divided into four groups: pictorial, textual, textual-pictorial and control group. When these groups read a text under one of the four gloss conditions, they were asked to think aloud. He concluded that a) glosses have a different impact on vocabulary learning and text comprehension. A combined gloss is more influential for text comprehension only. b) all multimedia gloss groups noticed and recognized the target words better than the control group. c) in the production of the target vocabulary items, no significant differences were found among any of the groups. d) the combined gloss group outperformed all other groups. He states that the literature on different types of multimedia glosses appears to indicate that the combination of textual and visual glosses has a more beneficial effect on comprehension and vocabulary learning than either type in isolation"(p.52).
ShaImani and KhaliliSabet (2010) carried out a research to investigate the effects of pictorial, textual and picto-textual glosses in E-reading. The participants included 120 students majoring in Teaching English as a foreign language (TEFL) at Islamic Azad university-Rasht Branch, Iran. They were divided into one pilot group and three gloss groups: textual group, pictorial group and picto-textual group which received treatment on five academic reading passages through picto-textual glosses. Two other groups received the same passages but with different glosses, textual group with the definition of key words and pictorial group with the related pictures. The results showed that a) all three gloss groups got higher mean scores on the post-test in comparison with the pre-test means b) the three types of treatment differed in their effectiveness on subjects' comprehension c) the picto-textual group outperformed the other two groups and the pictorial- gloss group outperformed the textual group.

Tabatabaei and Shams (2011) studied the effects of different kinds of multimedia glosses, including text, picture, and text-picture on online computerized L2 text comprehension and vocabulary learning. 60 junior high school students participated in their study; they were divided into four groups: three gloss groups with textual, pictorial, and textual-pictorial glosses, and one control group. Their study showed that a) all multimedia gloss groups comprehend online texts better than the control group b) multimedia gloss groups learn the target words better than the control group. C) the combination gloss groups causes the best reading comprehension.
Zarei and Hasani (2011) explored the effects of different glossing conventions (interlinear, marginal, pre-text, and post-text) on vocabulary recognition and recall with 158 participants of Imam Khomeini International University. Four groups were provided with interlingual glosses and four groups with intralingual glosses. The results of the study indicated no significant differences among the effects of intralingual glosses on vocabulary recognition and recall, and in the case of interlingual gloss both pre-text and marginal groups outperformed the post-text group.

In another study, Zoi, Bellou, and Mikropoulos (2011) investigated the effects of multimedia glosses on vocabulary learning in German as a second language with elementary school pupils. Unknown words were glossed under three conditions: text translation from German into Greek, presentation of the word in German and its translation pronounced in Greek, and word interpretation using a picture. 31 students participated in computer-based learning activities. The outcome revealed that the aural annotations of unknown words had positive effects on vocabulary learning.

Measuring the impact of glosses on reading comprehension, Farvardin and Biria (2012) conducted a study with 120 undergraduate students (36 males and 84 females) majoring in English Teaching at Azad University of Najafabad. They used three kinds of glosses in their study: single gloss in participants' first language (SL1G), single gloss in participants' second language (SL2G) and multiple-choice gloss (MCG) in participants' second language. The participants read the texts under one of these three conditions.
They drew on the mental effort hypothesis of Hulstijn (2001). The results of their study showed that MCG group outperformed the SL2G group in learning vocabulary, and SL2G group had the best performance in reading comprehension.

To conclude, as the above mentioned studies showed all types of glosses including multimedia glosses have positive effects on vocabulary learning and reading comprehension. However there are few studies that have investigated the impact of multimedia glosses on curriculum of Iranian high schools. Therefore, the present study aims to explore the effect of various multimedia glosses such as textual, pictorial and the combination of them on vocabulary learning and comprehension of computerized reading passages.
Chapter 3: Empirical Analysis

3.1. Introduction

This chapter includes the methodology that was employed for the study. It describes the participants, the instruments and procedures used for data collection.

3.2. Participants

This study was conducted initially with 104 female high school students studying at Fatimah Zahra high school in Qazvin. To homogenize the students and assess their proficiency level, the standard test of KET was administered. Based on their performance on the proficiency test, from among the 104 participants, 72 students were selected. They were from four separate classes in grades one and two. Randomly, one class was selected as the control group and the other three acted as the experimental groups. The range of their age was between 15-16. All of the participants were non-native speakers and in low-intermediate proficiency level. At the end of the treatment seven students were omitted because they had not participated in the post-tests. Table 1 shows the number of each group.

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<tr>
<th>pictorial</th>
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<th>Pictorial-textual</th>
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<td>18</td>
<td>18</td>
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3.3. Instruments

The materials and data collection instruments utilized in this study included the following:

1. A KET test including 20 items in multiple-choice format was used, to determine the homogeneity level of the students. This test was administered to 104. 72 students which were homogenous were selected for the treatment. The participants who scored between -1ST and +1ST were included in the study.

2. Ten texts were selected from Elementary 3 and 1of Iran Language Institute text books and two texts from Oxford Word Skill (basic). In each text, there were 9-11 unfamiliar words. The selected passages were computerized, and 9-11 words in each passage were glossed by a computer program called Power Point. The unfamiliar words were glossed in three ways, textual, pictorial and textual-pictorial glosses. There were 122 slides to show computerized passages and their bolded and underlined words. For pictorial group, the pictures related to the meaning of underlined words were searched and selected from the Internet and by clicking on the underlined word a new window appeared and the related picture was shown. For the textual group, the definitions of underlined words were selected from the Oxford elementary learner's dictionary (because of its clear and simple definition of words) and by clicking on the words a new window including the definition of that word appeared. And for the textual-pictorial group, a combination of
pictures and definitions appeared in a new window after clicking on the underlined words.

3. A vocabulary pre-test consisting of 106 words, was administered prior to the treatment. Participants were required to provide the Persian equivalents of the words. The aim of this test was to omit the familiar words from the post-tests. All words were selected from bolded words of the texts. The duration of this test was 40 minutes.

4. A reading comprehension post-test including 30 items in the form of multiple-choice questions was also administered to the students in the final session. Four passages were selected for the post-test reading comprehension, two texts with 6 questions; another one with 8 questions and the last passage with 10 questions. The duration was 35 minutes.

5. A vocabulary production post-test in the form of a fill-in-the-blanks test was administered to the students in a separate session. The test included 30 sentences which were selected from Oxford Elementary learner’s dictionary and Oxford advanced learner's dictionary. Each sentence included a blank space about the target words. The first letter of each word was presented and the Persian equivalent of words was provided in front of the blank spaces. The duration of this test was 20 minutes.
3.4. Procedures

This study was conducted in Fatimah Zahra high school computer site. To fulfill the aim of this study, the 72 selected students from Fatimah Zahra high school were administered a vocabulary pre-test including 106 words. The participants were required to write the Persian meanings of the words. The purpose of the pre-test was to make sure that the target words were unfamiliar to the participants. 60 words were unfamiliar to the students and these unknown words were used in their reading comprehension and vocabulary post-tests. Ten passages which were selected from Elementary 3 and 1 of Iran Language Institute text-book and Oxford word skill (basic) were glossed in three ways. In each passage about 9-11 unknown words were bolded, underlined and glossed. Bolded and underlined words were glossed in three different ways, pictorial, textual and pictorial-textual glossing. By clicking on the unfamiliar words in the textual gloss passages, the hidden definition of words selected from Oxford elementary learner's dictionary, appeared.

In the pictorial gloss passages, the related pictures appeared, and in textual-pictorial gloss passages the combination of picture and related definitions appeared on the screen. Ten passages were presented to participants in 10 separate sessions. And the duration of each session was almost 20 minutes. To the first group, these ten passages were presented with textual glossing; that is by clicking on the bolded words, students observed the definition of words. The second group was presented with pictorial
glossing passages and by clicking on the bolded words the related picture appeared and the third group received passages with both pictorial and textual glossing. The comparison group also received instruction through the computer and with Persian translation of the texts but without any glosses. At the end of the treatment, in the last session, the multiple-choice reading comprehension test was then administered to measure students' comprehension of the target passages. Finally, the fill-in-blanks vocabulary test was given to gauge the participants' vocabulary production. The gathered data were then submitted to statistical analysis.

3.5. Data analysis

In order to answer the research questions and to test the research hypotheses, the gathered data were analyzed using two separate one-way ANOVA procedures, one to investigate the effect of multimedia glosses on vocabulary production, and another to study the effect of the same activity on reading comprehension.
Chapter 4: Results and Discussion

4.1. Introduction

This study investigates the effects of different glosses in multimedia environment on vocabulary learning and reading comprehension. The results of participants' performance on post-tests are presented and discussed with regard to the research questions.

4.2.1. Investigation of the first research question

The aim of the first research question was to investigate whether or not there are any significant differences among the effects of various multimedia glosses on L2 vocabulary production. To do so, a One-Way ANOVA procedure was used. Descriptive statistics, including the mean, standard deviation, etc. are summarized in Table 1.

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<td>6.07</td>
<td>.75</td>
<td>10.37</td>
</tr>
</tbody>
</table>
Table 1 indicates that the highest mean on the vocabulary test belongs to the pictorial textual group followed by the textual group. The third highest mean belongs to the pictorial group. The comparison group has the lowest mean. To see whether or not the differences among the means of the groups are statistically significant, the One-Way ANOVA procedure was used. The obtained results are presented in Table 2.

Table 2. ANOVA on learners’ vocabulary production

<table>
<thead>
<tr>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
<th>$\eta^2$</th>
<th>.73</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>933.44</td>
<td>3</td>
<td>311.14</td>
<td>13.31</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>Within Groups</td>
<td>1425.56</td>
<td>61</td>
<td>23.37</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>2359.01</td>
<td>64</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In Table 2, the observed F value and the significance level (F = 13.31, P<.05) indicate that there are the significant differences among the groups. To locate the significant differences, a post hoc Scheffe test was used, the results of which are summarized in Table 3.

Table 3. Multiple comparisons for the ANOVA on vocabulary learning

<table>
<thead>
<tr>
<th>(I) glossingtype</th>
<th>(J) glossingtype</th>
<th>Mean Difference (I-J)</th>
<th>Std. Error</th>
<th>Sig.</th>
<th>95% Confidence Interval</th>
<th>Lower Bound</th>
<th>Upper Bound</th>
</tr>
</thead>
<tbody>
<tr>
<td>pictorial</td>
<td>textual</td>
<td>-1.17</td>
<td>1.69</td>
<td>.92</td>
<td>-6.03</td>
<td>3.68</td>
<td></td>
</tr>
<tr>
<td>pictorial</td>
<td>pictorial+textual</td>
<td>-1.40</td>
<td>1.69</td>
<td>.87</td>
<td>-6.25</td>
<td>3.45</td>
<td></td>
</tr>
<tr>
<td>pictorial</td>
<td>comparison</td>
<td>8.21</td>
<td>1.79</td>
<td>.00</td>
<td>3.05</td>
<td>13.38</td>
<td></td>
</tr>
<tr>
<td>textual</td>
<td>pictorial+textual</td>
<td>-2.22</td>
<td>1.61</td>
<td>.999</td>
<td>-4.8553</td>
<td>4.410</td>
<td></td>
</tr>
<tr>
<td>textual</td>
<td>comparison</td>
<td>9.396</td>
<td>1.722</td>
<td>.000</td>
<td>4.4439</td>
<td>14.34</td>
<td></td>
</tr>
<tr>
<td>pictorial+textual</td>
<td>comparison</td>
<td>9.619</td>
<td>1.722</td>
<td>.000</td>
<td>4.6661</td>
<td>14.57</td>
<td></td>
</tr>
</tbody>
</table>
As it can be seen in Table 3, there are statistically significant differences between each of the three experimental groups and the comparison group. In other words, all the experimental groups have outperformed the comparison group. At the same time, there are no statistically significant differences among the experimental groups. This means that glossing (regardless of whether they are textual, pictorial or textual-pictorial) can positively influence vocabulary production. The graphic representation of the results makes them more clearly understandable.

![Graph 1: Means plot on the vocabulary test](image)
The index of the strength of association show that 73% of the variance in the dependant variable (vocabulary production) is accounted for by the independent variable (type of glossing), and that the remaining 27% is left unaccounted for.

4.2.2. Investigation of the second research question

The second research question sought to investigate whether or not there are significant differences among the effects of various multimedia glosses on L2 reading comprehension. to this end, another One-way ANOVA procedure was used. The descriptive statistics of the participants' performance on the reading comprehension test are presented in Table 4.

Table 4. Descriptive Statistics for the ANOVA on reading comprehension

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error</th>
<th>95% Confidence Interval for Mean</th>
<th>Lower Bound</th>
<th>Upper Bound</th>
</tr>
</thead>
<tbody>
<tr>
<td>pictorial</td>
<td>15</td>
<td>15.40</td>
<td>7.01</td>
<td>1.81</td>
<td>11.51</td>
<td>19.28</td>
<td></td>
</tr>
<tr>
<td>textual</td>
<td>18</td>
<td>14.05</td>
<td>6.08</td>
<td>1.43</td>
<td>11.03</td>
<td>17.08</td>
<td></td>
</tr>
<tr>
<td>pictorial/textual</td>
<td>18</td>
<td>15.72</td>
<td>4.66</td>
<td>1.09</td>
<td>13.40</td>
<td>18.04</td>
<td></td>
</tr>
<tr>
<td>comparison</td>
<td>14</td>
<td>14.64</td>
<td>3.56</td>
<td>.95</td>
<td>12.58</td>
<td>16.70</td>
<td></td>
</tr>
</tbody>
</table>

Table 4 shows that the highest mean (15.72) belongs to the pictorial-textual group, which is close to the mean of the pictorial group (14.4). The comparison group has the third position (14.64), and the lowest mean belongs to the textual group (14.05). To see whether or not the differences among the means of the groups are statistically
significant, the One-Way ANOVA procedure was used. The obtained results are presented in Table 5.

<table>
<thead>
<tr>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>29.49</td>
<td>3</td>
<td>9.83</td>
<td>.32</td>
</tr>
<tr>
<td>Within Groups</td>
<td>1853.37</td>
<td>61</td>
<td>30.38</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1882.86</td>
<td>64</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Based on Table 5, the F value and the Sig. level (F=0.32, P>0.05) are indicative of no significant difference among the means. This means glossing does not affect reading comprehension. Moreover, there are no significant differences among the different types of glossing. The graphic representation of the results makes them more clearly understandable.

Graph 2. Means plot on the reading comprehension test
4.3. Discussion

The present study attempted to investigate the effects of multimedia glosses on vocabulary production and reading comprehension. One of the findings of the present study was that multimedia glosses and computer-based instruction have positive effects on vocabulary production. There was a significant difference among gloss groups and the comparison group. The result of this study is in tune with several other studies in this domain. The result of this study is in line with Tabatabaei and Shams (2011), who concluded that the multimedia gloss groups learn the target words better than the control group. Likewise, Jones (2004) showed that all glossed groups outperformed the control group in vocabulary learning. But Yanguas (2009) found no significant differences between glossed groups and control group in vocabulary production. Ko (2005) showed that there was no significant difference between no gloss and L1 gloss condition.

Another finding of this study was that there were no significant differences among the glossed groups in vocabulary production. This result contradicts other studies such as Shahroknı (2009); Yen and Wang (2003); Chun and Plass' (1996); and Kim and Gilman (2008) that indicated that the text-picture annotation had better impact on vocabulary learning.

Furthermore other studies have endorsed the influential role of different multimedia glosses on vocabulary learning. For example Al-Jabri's study (2009) showed that L1 glosses had better performance than L2 glosses for reading comprehension. Yoshii ' study (2006) confirmed the positive effect of both L1 and L2 glosses on learners'
incidental vocabulary learning and, in line with Al-Jabri (2009), stated that L1 text only had better function for remembering words.

In the case of reading comprehension, the result of this study showed that there were no significant differences among the glossed groups and the control group. In spite of a huge amount of students' interests and motivation toward computer-based instruction and their fascination about the computerized passages consisting of annotated words, the glossed groups did not perform as they were expected. Although this result was to some extent unexpected and in contradiction to other studies done in this area, and there was no doubt about the efficacy of digital glossing, there were some factors that could have led to this result. One of the factors may have been the novelty of this method in the instructional environment of that high school and the fact that the students needed more time and opportunity to accommodate themselves to computer-based instruction. Another cause may have been due to the translation of the passages for the comparison group, which might have helped them to retain a general idea in their minds. Actually the comparison group got a result close to experiments groups but with more challenge and more mental engagement because they demanded more time for the post-test reading comprehension.

On the other hand, multimedia groups learnt the material more comfortably and in a more enjoyable environment and responded to the post-test reading comprehension items in shorter time.
There is no doubt that multimedia instruction can be a great help for teachers and learners in improving the proficiency level in English courses. And there are so many studies that confirm the positive effect of multimedia glosses especially pictorial-textual gloss on reading comprehension. For example, Nagata (1999) and Farvardin and Biria (2012) confirmed the positive effects of multiple choice glosses on reading comprehension and deeper lexical processing. Unlike this study, Lomicka (1998) showed that computerized reading with full glossing results in deeper comprehension. Similarly, Yanguas' study (2009) showed that textual-pictorial glosses lead to better reading comprehension. In tune with the result of above mentioned studies, and unlike the present study, Shalmani and KhaliliSabet (2010) concluded that pictorial-textual glosses were the most effective gloss on reading comprehension.
Chapter 5: Conclusion and Implications

5.1. Introduction

In this chapter, the results of the present study with regard to research questions will be summarized. Then, pedagogical implications and suggestions for further studies will be provided.

5.2. Conclusion

The present study attempted to investigate the effects of different multimedia glosses namely; textual, pictorial, and textual-pictorial on vocabulary production and reading comprehension of high school students. The first research question examined the effect of multimedia glosses on vocabulary production. The result indicated that all three experimental groups outperformed the comparison group. All three types of multimedia glosses facilitated vocabulary learning, and the pictorial-textual gloss group performed slightly better than the other gloss groups. This is because an integration of definition and picture led to deeper processing of vocabulary items, using both visual and verbal systems. And vocabulary as an isolated item has a potentiality to remain in long term memory using both definition and static picture. With regard to the effects of multimedia glosses on reading comprehension, the finding of the study showed that there were no differences between the glossed group and the comparison group, which was provided with Persian translation of the texts according to the traditional approach.
5.3. Pedagogical Implications

Using computer-based instruction in the form of Power Point for all instructions in general, and for language learning in particular, can have positive and notable outcomes. By means of multimedia glosses in English classrooms, teachers can create a pleasant situation for teaching and keep learners interested and motivated by adding more pictures and even music to the instructional program. Students also can have a better comprehension with less difficulty. Consequently, as multimedia glosses create a pleasant environment, facilitate learning, help retention of materials in learners’ mind, and relieve the burden of teachers, they can be useful for both teachers and learners.

5.4. Suggestion for further research

For those who are interested in conducting research in the area of multimedia glosses and its effect on language learning the following areas of research are suggested.

1. This study suggests that multimedia glosses have positive effects on learners' vocabulary production and reading comprehension. But, it did not test the effects of these activity types on learners' listening, speaking or writing; these can be subjects for future research.

2. Investigating the impact of multimedia and computer-based instruction on teaching grammar can be another area for research.
3. Exploring the difference between picto-textual gloss in L1 and picto-textual gloss in L2 is another suggestion for future research.

4. Accompanying music with picto-textual glosses in comparison with picto-textual glosses alone may be another suggestion.

5. Static picture and video clip may have various effects on learning language; hence taking their differences into consideration is a new area for research.

6. Another suggestion can be the relationship between the amount of attrition and retention of vocabulary in a multimedia environment.

7. The sample size in the present study was small and confined to high school students. So this research can be conducted with a larger sample and with students at higher level of proficiency.
References


Appendix A: KET test of English language proficiency

Part 2

Questions 6–10

Read the sentences about visiting a friend in Scotland.
Choose the best word (A, B or C) for each space.

For questions 6–10, mark A, B or C on your answer sheet.

Example:

0 Ben is ............ with his friend Jamie for three weeks.
A staying B keeping C passing

Answer: 0 A B C

6 Jamie lives in a really small, ............ village in
the north of Scotland.
A single B tired C quiet

7 The two boys ............ to go walking in the hills near Jamie’s house.
A enjoy B love C feel

8 They usually spend the first ............ of each day climbing.
A part B group C break

9 They always ............ lots of sandwiches because they get very hungry.
A put B post C pack

10 If it’s too ............ to go out, they play computer games inside.
A busy B fine C wet
Questions 6–10

Read the sentences about going to the beach. Choose the best word (A, B or C) for each space. For questions 6–10, mark A, B or C on your answer sheet.

Example:

0 Carlos .......... Maria to spend the day at the beach.
   A asked       B said       C welcomed

   Answer: 0 A B C

6 The two friends left the city .......... in the morning.
   A short       B early       C ready

7 When they .......... to the beach, they went for a swim.
   A got         B passed      C arrived

8 Then Maria was tired, so she had a .......... under a tree.
   A pity        B time        C rest

9 Carlos went to a bar to .......... some sandwiches for lunch.
   A pay         B buy         C earn

10 In the afternoon, they .......... volleyball with some friends.
    A worked      B moved       C played
Questions 6–10

Read the sentences about Stella’s birthday. Choose the best word (A, B or C) for each space.

For questions 6–10, mark A, B or C on your answer sheet.

Example:
0 Stella ………… up early on her birthday.
   A woke    B stood    C went

Answer: 0 A B C

6 Her mother made her a big chocolate cake with lots of candles on the …………. 
   A bottom    B middle    C top

7 Stella …………. some friends to come to her house that evening.
   A agreed    B decided    C invited

8 Her friends brought her some flowers and a …………. card.
   A pretty    B best    C happy

9 They talked together and …………. a lot.
   A laughed    B preferred    C pleased

10 They had so much …………. nobody wanted to go home.
   A meal    B fun    C party
Questions 6–10
Read the sentences about a music club. Choose the best word (A, B or C) for each space.
For questions 6–10, mark A, B or C on your answer sheet.

Example:
0  The music club ........... after school every Wednesday.
   A  meets  B  goes  C  gets

   Answer:  D  A  B  C

6  Sam and Tim ........... the club last year.
   A  arrived  B  joined  C  came

7  Sam is learning the ........... there and Tim plays in a band.
   A  songs  B  guitar  C  rock

8  Last week the music club did a ........... in the school hall.
   A  film  B  match  C  concert

9  Sam and Tim’s parents came to ........... to them.
   A  watch  B  hear  C  listen

10 Sam and Tim didn’t ........... any mistakes and the music sounded great!
    A  make  B  do  C  happen
Appendix B: Vocabulary pre-test.

<table>
<thead>
<tr>
<th>Write the Persian meaning of the following words.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Refrigerator:</strong></td>
</tr>
<tr>
<td><strong>Garlic:</strong></td>
</tr>
<tr>
<td><strong>Butcher:</strong></td>
</tr>
<tr>
<td><strong>Cashier:</strong></td>
</tr>
<tr>
<td><strong>Dirty:</strong></td>
</tr>
<tr>
<td><strong>Say prayers:</strong></td>
</tr>
<tr>
<td><strong>Cookie:</strong></td>
</tr>
<tr>
<td><strong>Warm clothes:</strong></td>
</tr>
<tr>
<td><strong>Hearing:</strong></td>
</tr>
<tr>
<td><strong>Smell:</strong></td>
</tr>
<tr>
<td><strong>Five senses:</strong></td>
</tr>
<tr>
<td><strong>Sweet:</strong></td>
</tr>
<tr>
<td><strong>Pyjamas:</strong></td>
</tr>
<tr>
<td><strong>Dreams:</strong></td>
</tr>
<tr>
<td><strong>Wood:</strong></td>
</tr>
<tr>
<td><strong>Drill:</strong></td>
</tr>
<tr>
<td><strong>Pins:</strong></td>
</tr>
<tr>
<td><strong>Sewing:</strong></td>
</tr>
<tr>
<td><strong>Body:</strong></td>
</tr>
<tr>
<td><strong>Blow:</strong></td>
</tr>
<tr>
<td>Camera:</td>
</tr>
<tr>
<td>---------</td>
</tr>
<tr>
<td>Cabbage:</td>
</tr>
<tr>
<td>Run:</td>
</tr>
<tr>
<td>Mouth:</td>
</tr>
<tr>
<td>Attic:</td>
</tr>
<tr>
<td>Spooky:</td>
</tr>
<tr>
<td>Cupboard:</td>
</tr>
<tr>
<td>Carpet:</td>
</tr>
<tr>
<td>Parrot:</td>
</tr>
<tr>
<td>Forest:</td>
</tr>
<tr>
<td>Ocean:</td>
</tr>
<tr>
<td>Torch light:</td>
</tr>
<tr>
<td>Pay:</td>
</tr>
<tr>
<td>Tongue:</td>
</tr>
<tr>
<td>Dune:</td>
</tr>
<tr>
<td>Palm:</td>
</tr>
</tbody>
</table>
Appendix C: Vocabulary production post-test

Fill in the following blanks. The first letters and the meaning of words are presented.

1. My mother taught me how to(s---------).
2. Our old furniture is stored in the (a---------).
3. I am afraid of that(s---------) house.
4. They visited some hot(s---------).
5. He still has (n---------) about the accident.
6. I could hear Mina(s---------) in the next room.
7. She was wearing false (e---------).
8. If you give me a (n-------) and thread I will make a dress.
9. He stretched himself and(y-------).
10. Many (d--------) are covered by sand.
11. Her eyes filled with (t------).
12. A (l---------) is a cover for a lamp that is used to make the light softer or to direct it.
13. A (w--------) is a deep hole for getting water or oil from under the ground.
14. A (t----------) is a small electric light that you can carry.
15. A (w--------) is a very big animal that lives in the sea and look like a fish.
16. (C----------) was cooked and served with a cheese and sauce.
17. A (l--------) is a vegetable like a long onion with green leaves.
18. (D---------) is a small hill of sand formed by the wind, near the sea or in a desert.
19. There are several types of (p------) tree, some of which produce fruit like date.

20. He threw a piece of paper onto the fire and it flew up the (c--------).

21. A black coffee leaves the (b------) in the mouse.

22. An (e------) is the piece of skin that can move to close your eye.

23. She uses a hammer to bang the (n------).

24. My mother puts on her (n------) when she wants to sleep.

25. She (b-------) on the door angrily.

26. They ride across the vast, grassy (p-----).

27. I like (p-----------) ice cream.

28. Birds have (f------) on their bodies to keep them warm and to help them fly.

29. I (o---------) and was late for works.

30. One of the(s-------) is loose. So I tighten it with a screwdriver.
Appendix D: Multiple-choice reading comprehension post-test

Read the following passages and choose the best answer.

The Tehranis had company for dinner last night. In the morning, Mrs. Tehrani looked in the refrigerator and cupboard. She saw that she needed many things: meat, radish, garlic, lettuce and eggplant. She walked to the large supermarket in the neighborhood.

The butcher in the supermarket asked if she wanted beef or lamb. She decided to buy some beef. Mrs. Tehrani picked out everything that she needed. She paid the cashier and returned home.

In the afternoon, she cleaned the Apartment a little she moved the chairs around and dusted the furniture. Later, she did the dishes. Then she started to cook dinner. It took her about two hours to do all those things. She called her husband at his office. She reminded him that they were having company for dinner.

1. Last night the Tehranis---------.
   a) took some of their friend out for dinner.   b) had some guests for dinner
   c) had dinner at the company                     d) bought some furniture

2. The butcher asked Mrs. Tehrani, ---------.
   a) "Do you want some beef?"                         b) "What do you want?"
   c) "Do you want beef or lamb?"                      d) "Do you want some lamb?"

3. Mrs. Tehrani didn’t buy any ---------.
   a) radish                    b) beef                               c) lamb                                 d) eggplant

4. Whom did she pay?
   a) Butcher.                     b) Cashier.                    c) Supermarket.                     d) Guests.
5. Mrs. Tehrani bought----------.
   a) some vegetables       b) some furniture    c) beef and lamb    d) some dishes

6. What did Mrs. Tehrani need?
   a) Some vegetables and meat.                b) Beef and lamb.
   c) Some vegetables and lamb.        d) Lamb and eggplant.

7. Mrs. Tehrani cooked dinner----------.
   a) before doing the dishes              b) before going to the supermarket
   c) after washing the dishes       c) after calling his husband at his office

8. Mrs. Tehrani dusted the house because----------.
   a) she had some guests                  b) it was very dirty
   c) she wanted to go to company         d) she wanted to cook dinner

Henry is a clerk in an office in a town. He wants to live to be a hundreds, so health is very important to him. He gets up at five o’clock in the morning and lifts weights for thirty minutes. For breakfast he eats cauliflowers and cabbage with chili pepper and leek. It tastes disgusting, but he thinks it’s good for him. Then he runs for an hour in the park. He leaves for work at seven o’clock. He never goes by bus or train and he thinks that cars are extremely dangerous. So he walks everyday with a mask over his nose and mouth. He takes his lunch to work with him. He is sure that the lunch which the office provides isn’t good for him.

9. Henry eats cauliflowers, chili pepper, leek and cabbage for breakfast because-----.
   a) it tastes disgusting.                b) it is good for health.
   c) he likes it.                     d) it tastes good.

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10. In the morning he--------.
   a) walks to work                                      b) lifts weight for thirty five minutes
   c) goes to work by bicycle                    d) wakes up at seven o’clock

11. He doesn’t use car or train because--------------.
   a) they are dangerous for his health                      b) he always misses them
   c) he can run fast                                               d) he gets there early

12. He goes to the park because he-------------.
   a) enjoys it       b) lifts weights                        c) wants to walk   d) wants to run

13. He gets up at five o’clock in the morning, because he wants to-------------.
   a) eat breakfast                       b) go to work
   c) do exercise                          d) take a bus

14. He thinks that his office provides-------------for him.
   a) cauliflower and cabbage            b) disgusting lunch
   c) unhealthy lunch                   d) good lunch

There is an attic in our house. The attic is our favorite room. It’s at the top of the house. There are some stairs up to it and a very small door. There is a notice on the door saying ‘‘PRIVATE’’. The attic is dark and a bit spooky. Lucy’s afraid of it but I’m not. I like it because it’s ours. There are lots of things in it. There’s an old bed next to the wall. There’s a desk and a lampshade and a torch light on a big table. There are some spiders and a bird’s nest in the chimney. In the corner there’s a big cupboard. It’s full of games, old toys, dolls and clothes. There aren’t any curtains but there is an old red carpet on the floor. Under the bed, there’s a big black box with a lock for my things.
15. We go to the attic by---------.  
a)stairs         b) houses  
c)rooms         d) doors

16. The writer likes attic because---------.  
 a) Lucky is afraid of it  
     b) it’s spooky  
     c) it’s theirs  
     d) it’s full of old things

17. The writer keeps his------------in the box.  
 a) personal things  
     b) old toy  
     c) dolls and clothes  
     d) little spiders

18. There aren’t any--------in the cupboard  
 a) dolls  
     b) toys  
     c) boxes  
     d) clothes.

19. Lucy afraid of the attic, because it is, ----------.  
 a) dark and full of spiders  
     b) dark and private  
     c) dark and frightening  
     d) dark and full of old things

20. There aren’t any--------in the attic.  
 a) lampshades  
     b) torch lights  
     c) cupboards  
     d) curtains

21. Our clothes are----------.  
 a) in the black box  
     b) under the bed  
     c) in the cupboard  
     d) on the floor
There are many deserts in the world. A desert is a great area of hot, dry land. In the desert, there are many hills and drifts of sand or dunes. In some parts of the desert, the land is very high and there is some rain. In these high places, there are some plants and trees. There is also water from springs or wells. People live near these sources of water. They have houses and gardens with palm trees. Other people in desert lands move about from one place to another. They look for water and also grass for their animals. Life in the desert is not easy. There is not much water, and the weather is very hot in day and cold at night.

25. A desert is------------------.
   a) cold and wet               b) hot and wet
   c) hot and dry               d) wet and dry

26. "What are drifts of sand?"
   a) Spring and wells           b) Moving sand or dune.
   c) Gardens full of palm trees d) Sand in the water
27. In the desert, there is water from------------------.
   a) springs only                   b) hills of sand
   c) springs and wells             d) drifts of sand

28. In the desert, there are--------plants.
   a) no                           b) some
   c) a lot of                    d) many

29. It is ----------at night in the desert.
   a) cold                        b) hot
   c) warm                       d) cool

30. In the deserts there is rain ----------.
   a) all over it                 b) in high places
   c) near springs and wells     d) near the palm trees
Appendix E: A sample passage of pictorial group.

Our wonderful eyes

Just think what a wonderful thing it is to have eyes. You can see flowers and birds, the sun and the stars. You can see the world you live in and appreciate its beauty.

Our eyes are the most important part of our body. Old Mother Nature has done a great deal to protect them. A wall of bone surrounds each eye to protect it from hard blows. The eyelids can drop down and keep out the light. This helps us sleep. The eyelashes keep harmful dust from getting into the eyes. Tears wash things out of the eyes. Our eyes work like cameras. They take a picture of what we see. We do not know what the picture is until messages about it go from our eyes to our brain. Then we see. All this happens very fast.
Appendix F: A sample passage of textual group.

Our wonderful eyes

Just think what a wonderful thing it is to have eyes. You can see flowers and **birds**, the sun and the **stars**. You can see the **world** you live in and appreciate its beauty.

Our eyes are the most important part of our body. **Old Mother Nature** has done a great deal to protect them. A wall of **bone** surrounds each eye to protect it from hard blows. The **eyelids** can drop down and keep out the light. This helps us sleep. The **eyelashes** keep harmful dust from getting into the eyes. **Tears** wash things out of the eyes. Our eyes work like **cameras**. They take a picture of what we see. We do not know what the picture is until messages about it go from our eyes to our **brain**. Then we see. All this happens very fast.

The part inside the head of a person or an animal that thinks and feels
Appendix G: A sample passage of textual-pictorial group.

Our wonderful eyes

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The part inside the head of a person or an animal that thinks and feels