

## **Cognitive Approach and Vocabulary Improvement of Iranian EFL Learners Using Visual Devices**

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### **Abstract**

The study meant to emphasize meaningful and natural presentation of vocabulary usage by emphasizing the cognitive styles of EFL learners. To this purpose, two groups of pre-intermediate EFL learners, each with 20 subjects, as experimental and control group participated in study. The experimental group received instruction to learn new words in the form of video slides and scanned photos. After a period of 2 months of instruction 20 hours, 350 new words were presented. To estimate the effect of the treatment, pre and posttests were taken. Using some statistical procedures such as Spearman correlation and T-test, meaningful relationship could be identified between the procedures incorporated for both groups. However, the experimental group reached higher degree of achievement for the material presented to them by scoring higher in the total mean.

**Keywords:** cognition, vocabulary, learning style, graphic devices

### **INTRODUCTION**

Vocabulary has always been one of the most fundamental language components which is a part of all language skills and constitutes the major factor of meaning-based activity. Besides, the acquisition of vocabulary has been recognized to be of great importance in the area of language teaching (Nunan, 1999; Rivers, 1983, Ellis, 2003). In other words, learning lexical items and meaning-bearing items is far more important than other components of language. It is claimed that presenting and learning vocabularies are considered more important than focusing on structural items (Harmer, 2000). Thus, nowadays there is an attempt to give enough emphasis to the presentation and practice of the second language lexicon using appropriate and suitable teaching strategies (Schmitt & Meara, 1997).

Teachers should know that language learners enjoy learning vocabulary that they need in speech and writing. This can be undertaken in parallel with the selection of the approaches and procedures that may facilitate the acquisition of the appropriate load of vocabulary they need. In other words, teaching new words has to happen in contrast

with approaches that try to teach a language by referring to an out-of-context approach. According to Nunan (1999), "Teaching second language words and expressions has to be carried out in a logical context and in parallel with the appropriate context" (p.65). In other words, it is not possible to ignore the role of context in teaching the new words. Besides, "teachers has to refrain from emphasizing linguistic rules and grammar forms which do not serve any functional and immediate need for the rather novice learner in contrast with teaching L2 lexical items" (Ellis, 2003, p. 144).

It has to be noticed that Teaching and learning vocabularies in the language classes are subject to a number of limitations and problems. Lennon (1998) noted that language words and expressions have been considered something of peripheral importance that could be approached in a more effective and serious way. In the process of reading comprehension in a second language (L2), one of the integral components, though not the only or most important component, is the ability to decode or understand individual vocabulary items in a text (Schmitt & Meara, 1997).

The traditional methods for teaching vocabulary such as the grammar translations and direct method emphasized memorizing lists of new words and expressions out of any particular context. As Schmitt and Meara (1997,pp.8-10) discussed, the approaches used before suffer from the following mismatches:

- a. The teaching process is boring and monotonous.
- b. They are ineffective and impractical.
- c. The teaching process is not natural or demanding.
- d. The learning materials are subject to forgetfulness and lack practicality.
- e. They are presented de-contextually.
- f. The focus is on memorization and definition.
- g. Little or no attention has been given to the cognitive properties of the learners.
- h. Learning styles are ignored.

The goal of the present study is introducing as approach that would help the learners overcome some of the stated problems above and instead use the techniques that may facilitate the vocabulary learning processes. It would be a step towards facilitating the vocabulary acquisition of the EFL learners in Iran and assist them to preserve their vocabulary knowledge for longer periods of time. This study was designed to provide the answers to the following research questions:

- Can using pictures and slides implemented by teacher promote the acquisition of new words?
- To what extent emphasizing can using cognitive language learning facilitate vocabulary acquisition?

## **VOCABULARY ACQUISITION**

The term vocabulary refers to the words students must know to communicate effectively, and falls into four categories: listening vocabulary, speaking vocabulary, reading vocabulary and writing vocabulary (Armbruster, Lehr, & Osborne, 2001).

Building a large vocabulary is an essential component of learning to read. To comprehend most students' books, a reader must have a large vocabulary because these texts contain language that is ten times more complex than the conversational language of college students (Cunningham & Stanovich, 1998). People with large vocabularies are more proficient readers, writers, and speakers than those with limited word knowledge (Meara, 1995).

Learning an L2 is in close correspondence with the level and range of EFL vocabulary knowledge. Coady (1997) says that many teachers and scholars feel that teaching vocabulary is a low level intellectual activity unworthy of their full attention. Consequently, vocabulary development is receiving insufficient attention in the classroom. However, in the past 25 years, second language vocabulary acquisition has become a field of investigation that has seen an explosion of experimental research.

Students learn most vocabulary in context incidentally. They believe that words which are acquired in this way are going to be better learned and understood than words taught through explicit instruction, because the learner will be so involved and active in developing the meaning of the word. There is general agreement that most words are not learned in one meeting, but need many meetings for the sight sound-correspondences to be made and for the receptive understanding of the word to take place (Nation, 1990). Many researchers consider vocabulary knowledge to be an important variable that affects comprehension in both first and second language. (Alderson, 2000; Joshi and Aaron, 2000; Qian, 2002; Ricketts et al., 2007).

According to Qian (2002) having a larger vocabulary gives the learner a larger database from which to guess the meaning of the unknown words or behavior of newly learned words, having deeper vocabulary knowledge will very likely improve the results of the guessing work.

Clearly, vocabulary is the key to a basic understanding of the target language. According to Day (2011), one of the primary ways to learn vocabulary is through reading. Reading can serve as a means for vocabulary development because it brings students into contact with new words and repeatedly reinforces the words previously known.

Joshi and Aaron (2000) find that vocabulary knowledge is a strong predictor of reading ability when factoring reading speed with decoding and comprehension. Martin-Chang and Gould (2008) find a strong correlation both between vocabulary and reading comprehension and between reading rate and primary print knowledge. Vocabulary knowledge is essential in reading comprehension because it has a similar function to background knowledge in reading comprehension. Vocabulary knowledge helps students in decoding, which is an important part of reading (Qian, 2002).

### **Approaches to Teaching Vocabulary**

Second language vocabulary instruction has undeniably come a long way with regards to pedagogical approaches, classroom methodologies and utilization of language learning resources. Zimmerman (1997) follows the course of pedagogical advancements

in vocabulary instruction, highlighting a few particularly influential models, including the Grammar-Translation Method, the Direct Method, the Audio-Lingual Approach, Communicative Language Teaching and the Natural Approach.

Teachers using the Grammar Translation Method, popular in the 1700s and 1800s throughout Europe, required learners to memorize grammatical rules of the target language and supplied learners with numerous bilingual lists of vocabulary, so the students may read and translate texts from classical Greek and Latin literature (Zimmerman, 1997, p. 7).

The Direct Method, emerging at the end of the 19th century, moved beyond translations from the L1 to the L2 and took a more interactive approach to language learning. Classes using the Direct Method are taught in the L2, are relatively small and intense, and involve a series of question/answer interactions. Though vocabulary teaching using the direct method aims to include lexical items that are relevant to the students and helps students acquire words through use of visuals, critics argue the learning environment is impractical and the method entails overgeneralizations of communication similarities between learners' NL and their TL (Zimmerman, 1997).

Structural linguists, creators of the Audio-Lingual Method around the time of World War II, perceived the problems of second language learners to be the result of the clashes between different language's grammatical structures. Vocabulary learning in the audio-lingual classroom consists of oral drilling of the target vocabulary, with an emphasis on acquisition as a process not unlike forming a habit. Some researchers view the audio-lingual approach as undervaluing vocabulary items for their communicative value in the approach's fixation on grammatical structures (Zimmerman, 1997).

After these models a new pedagogical approach called Communicative Language Teaching (CLT) which placed emphasis on explicit vocabulary instruction was introduced. CLT, the main goal of which is to teach the language so that students are able to communicate with others, regards vocabulary as an element of chief importance. Getting learners to a point where they feel they can effectively express themselves, be understood and comprehend others in their L2 requires extensive building of students' lexicon. CLT places prominence on fluency, as opposed to accuracy, and typically addresses vocabulary instruction within contextualized activities, getting students to utilize language in appropriate ways (Zimmerman, 1997).

The Natural Approach views second language vocabulary acquisition as a process which is intended to occur naturally with prolonged exposed to the target language, and understanding vocabulary, "a bearer of meaning", is a vital part of the natural acquisition (Zimmerman, 1997, p. 15). Vocabulary instruction accentuates content that is relevant and interesting for the learner, and "students' attention is not on vocabulary learning per se, but on communication, on the goal of an activity".(Krashen & Terrell, 1983, p. 156, as cited in Zimmerman, 1997, p. 15).

These approaches compose just a fragment of the current prevailing models in second language vocabulary instruction, but have been summarized so as to provide a basis on

which discussion of further models will be built. Many of the models, in one form or another, are still used today in second language learning classrooms. The review now switches to less-known, modern methods and techniques used to teach vocabulary in a second language.

### **Visual Devices in the Language Class**

Visual devices are the process of establishing an association between a language and an image through the use of schematic drawings or pictures (Boers, Lind Stromberg, Littlemore, Stengers, & Eyckmans, 2008). Words are believed to entail both sensory and meaning features and both types of information can be processed and represented in human memory ( Craik & Lockhart, 1972). Inclusion of pictorials in the instruction, therefore, is expected to prompt activation of the sensory attributes of the target items and in turn facilitate their retention and recall.

Experimental research in this area has found that the effectiveness of pictorial elucidation depends on a number of factors such as the quality of the image, transparency of the figurative usage, the stage of the instructional process at which images are introduced, cognitive style of the learners and learning objectives. Boers et al (2008) report the results of three case studies where pictorials were used to elucidate the literal senses of the target words with the purpose of helping the students interpret and remember their figurative meanings. The variables examined were the stage of the instruction process at which pictorials are presented, the cognitive style of the learners and learning goals (receptive vs. productive knowledge). The time at which pictorials were introduced in the instruction process was found to have an impact on the mnemonic effectiveness of pictorial elucidation.

The benefits were found to be the greatest when pictures preceded verbal input and were used to stimulate active cognitive involvement of the learners (i.e. when learners were asked to use pictorial clues to hypothesize about the figurative meaning of the target words) and less prominent when images were presented together with verbal explanations. The differences, however, were particularly significant with regard to the learning goals and cognitive style of the learners.

Overall, the results of these studies suggest that pictorial elucidation could be an effective mnemonic technique for the purpose of retention of word meaning especially for learners who are high imagers (i.e. individuals whose cognitive style shows a predisposition for thinking in mental pictures). Verbal learners were also found to benefit from pictorial support when images accompanied propositionally presented information. Image-based instruction, however, was found to be less effective in facilitating recollection of form, and sometimes even seems to have had distractive effect on visual learners. Boers and his colleagues (2008) speculated that high-imagers tend to focus on images and pay less attention to linguistic form and the lexical composition of multi-word units, which impedes their ability to generate the target expressions.

In order to further test this hypothesis, Boers and his colleagues (Boers et al, 2008) designed another experiment that focused specifically on the effect pictorial elucidation and that it may have an effect on the retention of the form of idioms (i.e. their precise lexical composition) and the possible effect of cognitive-style variables. The meaning of the target idioms was explained through reference to the original, literal meaning of the expressions. In order to provide extra stimulation for dual coding, for half of the target idioms the formation of mental images was facilitated by adding photographs or drawings to verbal explanations. The learners' recollection of the target phrases was measured by a gap-fill test. The data obtained provided little evidence that pictorial support enhances retention of linguistic form. Pictures were even found to have a detrimental effect on recollection of the more difficult words, especially for students who had a predisposition for processing vocabulary through imagery.

The results of the above-described studies call for some caution in providing pictorial support when teaching L2 vocabulary. The present study is an attempt to examine whether using graphic devices and other cognitive styles can enhance vocabulary retention and acquisition.

Nation (2001) discusses the role of visual devices in teaching words by saying that using pictures makes direct association between the word and its external, concrete manifestation. He adds that two of the modes falling within explicit instruction are providing the L1 equivalence of each L2 word and presenting L2 words through pictures. As to the latter, i.e. the visual mode of presenting vocabulary items, it is frequently utilized at low proficiency levels for two reasons. First, low-proficiency students have trouble understanding word definitions in L2. Second, such visuals as pictures provide a facile mode for the presentation of especially concrete words. As a result, in addition to the learner factor of visual intelligence, the mode of presentation as an instructional factor can contribute to L2 vocabulary acquisition.

### **Visual Devices and Vocabulary Retention**

Wright (2002) has discussed the use of pictures for language teaching is an innovative step that can help both learners and teachers. To support his view, he refers to the situations where pictures have been used and at the same time he gives reference to the techniques and procedures which can be implemented for this purpose. He initially discusses that Professor Corder distinguished between talking about pictures and talking with pictures. This was a helpful distinction because, at that time, the conventional way of using a picture was to describe it. Corder distinction drew attention to the great variety of potential activities in which pictures can be referred to but not described .

To support the use of pictures and other devices Wright (2002) continues by saying that the idea of the need for an information gap was an evidence for this technique. He continues (2002, p. 28):

Once more this was the most useful concept in general, and in particular when applied to the use of pictures. Basically, the reason for

listening and reading is to find out something that we do not know. Sometimes, of course, we read for confirmation of what we know, or we might listen just for the comfort of a friend's concern. However, the concept of "gap" is an important one in language teaching and provides a ready guide to the validity and usefulness of what we are doing in the classroom. Other gaps have been identified over the years: "Opinion gaps" refers to a difference of opinion as a reason for communicating; "perception gap" refers to people perceiving things differently or perceiving different things and wanting to communicate this.

He discussed that no one chooses to talk to anyone about everything just because they might know something we do not know or have an opinion on something we view differently. Many activities in the communicative methods of recent years have ignored the idea that in normal life we must want to cross a gap in order to bother to communicate. In other words, there must be a reason which we care about.

### **Teaching Vocabulary through Multi Media**

Chun and Plass (2008) carried out a research in order to enhance vocabulary retention using multi media. They discuss that research on second language (L2) vocabulary acquisition has revealed that words associated with actual objects or imagery techniques are learned more easily than those without. With multimedia applications, it is possible to provide, in addition to traditional definitions of words, different types of information, such as pictures and videos. Thus, one of the fundamental research questions posed in the use of multimedia systems is: How effective are annotations with different media types for vocabulary acquisition? Their study discussed the results of three studies done with 160 university German students using Cyber Buch, a hypermedia application for reading German texts that contained a variety of annotations for words in the form of text, pictures, and video. The issues examined were related to (a) how well vocabulary is learned incidentally when the goal is reading comprehension, (b) the effectiveness of different types of annotations for vocabulary acquisition, and (c) the relationship between look-up behavior and performance on vocabulary tests. The results showed a higher rate of incidental learning than expected (25% accuracy on production tests, 77% on recognition tests), significantly higher scores for words that were annotated with pictures + text than for those with video + text or text only, and a correlation between looking up a certain annotation type and using this type as the retrieval cue for remembering words.

Boers et al (2008) reported the results of three case studies where pictorials were used to elucidate the literal senses of the target words with the purpose of helping the students interpret and remember their figurative meanings. The variables examined were the stage of the instruction process at which pictorials were presented, the cognitive style of the learners and learning goals (receptive vs. productive knowledge). They conclude that:

The time at which pictorials were introduced in the instruction process was found to have an impact on the mnemonic effectiveness of pictorial

elucidation. The benefits were found to be the greatest when pictures preceded verbal input and were used to stimulate active cognitive involvement of the learners (i.e. when learners were asked to use pictorial clues to hypothesize about the figurative meaning of the target words) and less prominent when images were presented together with verbal explanations. The differences, however, were particularly significant with regard to the learning goals and cognitive style of the learners. (p. 214)

Vasiljevic (2012) by using pictures and other graphic devices performed a study on the use of idioms. According to him, cognitive semantic studies have shown that the dual coding of input (both verbal and visual) promotes the formation of memory traces and, the retention of information. These findings have prompted the use of mental imagery in language teaching, where pictorial elucidation has been found to improve comprehension.

## **METHODOLOGY**

The study being carried out was an experimental method of research. Richards and Schmidt (2002) discuss that experimental method is an approach to educational research in which an idea or hypothesis is tested or verified by setting up situations in which the relationship between different participants or variables can be determined. The plan for conducting an experimental study, specifically the plan(s) for selecting participants, manipulating dependent study, started with two pre-inter groups of EFL learners in a language institute in Kerman.

### **Participants**

The population of the study was made up of 85 pre-intermediate EFL learners in Shokouh Language Institute in Kerman. To homogenize the study subjects, Oxford Placement Test was administered and only those subjects whose score fell one standard deviation above and below the mean were selected for the study. They made a population of 40 subjects who were randomly classified into two groups, each group included 20 female students, aged 15 to 18.

### **Instrumentation**

A set of tests of vocabulary were used to tap the vocabulary knowledge of the learners in both groups. The tests were constructed based on the inventory of the new words that appeared at the end of each lesson of the English Books, and they were chosen from the test collection of the textbooks which are normally taught in the language institute. They are supplementary sources that tend to improve the vocabulary knowledge of the learners of English by providing a lot of multiple choice test items.

## **RESULTS**



## Pair-sample T-tests

Table 1 demonstrates the information about the pretest for the control group (CG). The mean score for the pretest CG is calculated to be 12.80 while this changes to 14.20 for the posttest. It can potentially reveal the effect of the procedure used by the teacher.

**Table 1.** The pretest for the control group (CG)

	N	Mean	Std. Deviation
Pretest for CG	20	12.8000	1.10501
Posttest for EG	20	14.2000	1.60918

Table 2 presents the data on the pretest for Experimental group (EG). The mean score for the pretest EG is calculated to be 12.95 while this changes to 15.95 for the posttest. Here the mean of the final score increases significantly. It can clearly reveal the effect of using slides and other visual devices on the vocabulary improvement of the EFL learners of the study who were exposed to this type of procedure.

**Table 2.** The pretest for Experimental group (EG)

	N	Mean	Std. Deviation
Pretest for EG	20	12.9500	1.87715
Posttest for EG	20	15.9500	1.66938

On the other hand, table 3 presents the information about the t-value test. As it can be seen, the table t for the two pre and posttest is calculated to be 51.8 and 39.46 respectively at 19 degree of freedom. The relative significance of the two tests is .000 for both tests that is an indication of perfect relationship between the two tests.

**Table 3.** Two-tailed test for pretest CG

Test Value = 0						
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Pretest CG	51.803	19	.000	12.80000	12.2828	13.3172
Posttest CG	39.464	19	.000	14.20000	13.4469	14.9531

Moreover, table 4 presents the information about the t-value test, or the degree of significance of the two tests. As it can be seen, the table t for the two pre and posttest is calculated to be 30.85 and 42.72 for both pre and posttest of EG at 19 degree of freedom. The relative significance of the two tests is .000 for both tests that is an indication of perfect relationship between the two tests since  $\text{Sig} = .000 < .05$ .

**Table 4.** One-Sample Test for Pretest EG

	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Pretest EG	30.852	19	.000	12.950	12.0715	13.8285
Posttest EG	42.729	19	.000	15.950	15.1687	16.7313

## Correlation Analysis

Table 5 demonstrates the required information about the correlation between the pretest and posttest for both EG and CG. As it is clear, the coefficient correlation between the pre and posttest for CG is estimated to be .616 which is not high enough. On the other hand, the correlation for the pre and posttest of EG is calculated to be .772 which is relatively acceptable.

**Table 5.** Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Pre & posttest for CG	20	.616	.004
Pair 2	Pre & posttest for EG	20	.772	.000

## CONCLUSION

As it was mentioned before, Boers (2008) et al did three case studies at which pictorials were used to clarify the literal sense of the target words to help the students to interpret and remember their figurative meanings. The results revealed that pictorials have an impact on mnemonic effectiveness and the effect will be the greatest when pictures preceded verbal input to stimulate active cognitive involvement of learner . Also Vasiljevic (2012) expressed according to his cognitive semantic study the dual coding of input (both verbal and visual) increases the formation of memory traces , the retention of information , the use of mental imagery in language teaching and learners' comprehension .

The data of the current study proved the effect of using slides and other graphic devices to improve the vocabulary knowledge of the learners. The difference between the mean scores of the pre and posttest proved that the EG improved more satisfactorily. Based on the total mean score for the pretest of the EG, it was estimated to be 12.95 while it increased to 15.95 for the posttest of the same group.

Considering the results of the two groups, it can be concluded that learning vocabulary is a meaningful process that entails the active and meaningful participation of the learners in the teaching-learning processes. Data from this study show that the difference in the mean score of the vocabulary acquisition was statistically significant, because the EG showed a significantly higher amount of growth in vocabulary knowledge compared to the CG. Paying attention to the active participation of the learners in the learning processes can have facilitative and meaningful effect on their cognitive learning. In such a situation, vocabulary learning can lead to better retention of vocabularies among the students.

Based on the achieved results, it was proved that cognitive language learning can facilitate the process of vocabulary acquisition and this confirms the conclusions of the studies done by Boers (2008) and Vasiljevic (2012) . Regarding the goal of the study, enough emphasis was given to the role of the learners by exposing them to meaningful learning. The results showed improvement in the vocabulary development of the learners in the EG more than that of the CG.

The findings suggested that pictorial elucidation based on learner-generated drawings can promote acquisition of meaning and form of L2 words. Second language vocabulary acquisition has revealed that words associated with actual objects or imagery techniques are learned more easily than those without and this is parallel to the findings of the research carried out by Chun and Plass (2008). With multimedia applications or LCD slides, it is possible to provide, in addition to traditional definitions of words, different types of information, such as pictures and videos.

In the present study, it was concluded when the individual learner transitions into a meaningful and cognitive learning context, he was given a complete responsibility to deal with the problem posed to him, whether learning a single new word or getting him to make a novel sentence with the learned words. Besides, it can be discussed that cognitive learning using slides decreases the learners' need to ask questions since the slides which are displayed significantly assist them to know more about the new words without any need for the teacher to describe more.

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