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# Anchoring Effects of English Vocabulary Instruction: The Case of Pre-University Students

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# Abstract

The main purpose of this study is to investigate the effectiveness of employing Concept Mapping (hereafter CM) in vocabulary instruction on Iranian pre-university students. This study also seeks to find whether there is difference between male and female students' vocabulary learning when they are subjected to CM instruction. In so doing, an Oxford Placement Test was administered among 120 pre-university students in two high schools in Iran. Eighty students who scored between +1 and -1 standard deviation above and below the mean were selected and randomly assigned into concept mapping group (CM) and non-concept mapping group (NCM) (20 male and 20 female). The results indicated that the CM group outperformed the NCM group in vocabulary learning. It was also revealed that there was no significant difference between males and females. Some pedagogical implications in the EFL context are discussed in the subsequent section.

Keywords: vocabulary instruction, pre-university students, concept mapping

# 1. Introduction

For many years, vocabulary instruction was like the weather: everybody talked about it, but nobody knew what to do about it (Blachowicz,1986). Vocabulary, which is the key material of the language, is certainly of crucial importance in expressing ideas and thoughts as communicating because without a sufficient amount of vocabulary, students cannot understand others or convey their own intended meanings and ideas. However vocabulary is much more than just single words. Recent vocabulary studies outline an understanding of *lexis*, the Greek for *word*, which in English "refers to all the words in a language, the entire vocabulary of a language" (Barcroft, Sunderman, & Schmitt, 2011). According to Swan and Walter (1984), vocabulary acquisition is the largest and most important task facing the language learner. Wilkins (1972) states that "while without grammar very little can be conveyed, without vocabulary *nothing* can be conveyed". Fromkin and Rodman (1974) also confirm that the acquisition of grammar and the basic units of meaning: vocabulary or lexical of language should be taken into consideration in language learning. English vocabulary is complex, by means of three main facets related to form, meaning, and use, as well as layers of meaning connected to the roots of individual words (Nation & Meara, 2010).

Vocabulary knowledge, incorporating both oral and written vocabulary, is critically important for a student's success in school (Kamil et al., 2008). Godwin - Jones (2010) claims that vocabulary is an indispensable component for improving competency in all areas of communication. Based on the Matthew Effect (Stanovich, 1986), students who know more vocabulary will continue to learn more (Joshi, 2005). Researchers such as Allen (1983) revealed that lexical problems frequently interfere with communication; communication breaks down when people do not use the right words.

The first challenge in facing with an unfamiliar text in the foreign language seems to be its vocabulary (Grabe & Stoller, 1997). When a text has many new words, students quickly despair and are discouraged. Therefore, a crucial part of the process of education is increasing vocabulary knowledge both as a means and as an end (Nagy, 1988). In fact providing vocabulary instruction improves not only students' reading comprehension and writing quality, but also their listening vocabulary and their speaking vocabulary (Joshi, 2006; Kame'enui & Baumann, 2012). Nevertheless, much vocabulary instruction involves the use of definitions, some combination of looking them up, writing them down, and memorizing them. According to the studies, beginners prefer learning words separately, that is, using a list of words to memorize, whereas advanced students, with some exceptions, try to learn words in context (Ellis, 1994).

Thus, within the framework of teaching, L2 teachers should take a more comprehensive approach to vocabulary development in order for L2 learners to reach a higher quality and quantity of L2 output (Sanaoui, 1996; Swain, 1996). Some earliest researchers, led by Rubin and Stern (1975) shift their focus from teaching methods and materials to a more learner-centered aspect, maintaining that successful language learners employ a variety of learning strategies in their study to facilitate language acquisition. Additionally, VanPattern (1989) emphasizes that word knowledge is interrelated, words are not isolated units, and background of the student plays a factor on how well it is understood, and vocabulary is best taught in context because there are "many points of support. Moreover, understanding new vocabulary should be meaningful to students by connecting words to something they already know (Iwai, 2007).

In the context of Iran, Keshavarz and Mohammadi (2006) emphasize the importance of teaching vocabulary and necessitates shifting attention to the application of efficient method and techniques for the teaching of vocabulary to foreign language students. Likewise, vocabulary teaching is generally restricted on presenting new items as they appear in any activity with not preparing the learners through activation of prior knowledge or helping them regularly revise the previously learned vocabulary items until they are thoroughly learnt. According to Rahimi and Sahragard (2008), learning a foreign or second language at intermediate and advanced levels of proficiency entails the acquisition of thousands of words. Language learners look for efficient ways to increase opportunities for retaining new words in long-term memory, but forgetting is a common problem. Language learners often complain that they forget new words soon after learning them.

The gender variable can also affect the strategies that learners use to learn a second language (Oxford, 1990). A number of studies (e.g., Liu, 2004; Poole, 2005) stated that gender variable can have an effect on the use of language learning strategies.

There are approaches that stress relating words to one another, and help students to make connections by discussing the ways that new vocabulary relate to one another and to students' existing vocabulary knowledge (Neuman, Newman, & Dwyer, 2011; Silverman, Proctor, Harring, Dowle, Mitchell, & Meyer, 2014). These include clustering strategies that call for students to group words and map them according to the kind of link they have to story structure categories (Blachowicz, 1986). CM is a tool that makes ideas visual. It allows prior experience and understanding to be taken into consideration when building new concepts into the perceptual framework (Novak, 2010). Winters (2001) declares that graphic organizers represent a graphic teaching strategy which is devised to help learners build the conceptual connections that they need to make sense of any word completely. Though the literature on concept mapping has been primarily concerned with its application in L1 context, its benefits in L2 context has recently been explored, as well (Ghanizadeh, 2007).

The purpose of this research was twofold: on the one hand, it investigated the effect of concept mapping on Iranian preuniversity students' English vocabulary learning. On the other hand, the study was an attempt to compare the performance of the male and female pre-university students in Iranian EFL context. Hence, in order to fulfill the main objectives of the study, the following research questions were formulated:

1) Does CM strategy instruction have any effects on Iranian Pre –university students' English vocabulary learning?

2) Is there any difference between male and female in learning English vocabulary using CM?

# 2. Literature Review

CM relies deeply on cognitive theory and Ausubel's assimilation theory (Novak & Cañas, 2008). According to assimilation theory, learning is the most effective when new knowledge is related to previously learned material. Novak developed the idea of CM in the 1960's, in an attempt to visually represent the structure of information (Novak 1991). The basic Novakian CM usually starts with a general concept at the top of the map, and then works its way down through a hierarchical structure to more specific concepts. Concepts are placed in a box, while linking words are not. Lines are drawn from a concept to a linking word to a concept. Novak (1993) argued that visualization of concepts and relations may be efficient at "chunking" knowledge to increase the storage capability of students' short-term memory. CM as a learning strategy uses a rich social environment, where learners work individually and in groups to scaffold and mediate learning of each other (Oakley, 2004; Novak & Gowin, 1984; Ausubel, 1968).

Many studies have been conducted to determine the role of CM strategy instruction in improving different language skills. This strategy was used by Lui, Chen, and Chang (2010), Dolehanty (2008), and Carrell, Pharis and Liberto (1989) in enhancing L2 reading comprehension. In examining its impact on L2 listening comprehension, Fahim and Hiedari (2006), Fahim and Amjadiparvar (2012) stated a positive influence of CM on improving this skill. Ghonsooly and Hosienpour (2009) reported the effect of CM on speaking fluency of Iranian inter mediate EFL students, besides, in a study by Pishghadam and Ghanizadeh (2006) on the effectiveness of CM on EFL writing ability of a group of Iranian students, it was found that this strategy resulted in the improvement of students' writing ability.

On the other hand, gender issue is presently getting a great attention in the studies. However, just few studies have been conducted on actual ESL/EFL performance of males and females (Freeman & Long, 1991). Moreover, few researchers have focused on gender differences while using CM. The better performance of female students is revealed by the short term research studies conducted on the use of concept mapping as study tool in Chemistry (Boujaoude & Attieh, 2003). The results of this study showed that female students scored significantly higher than boys while using this study tool. Nevertheless, some other studies with longer durations of using concept mapping conducted by Bello and Abimbola (1997), Abayomi (1988), Ahlberg and Ahoranta (2004), and Kaur (2012) showed no significant difference in the performance of maleas and females in science subjects.

## 3. Methodology

#### 3.1 Participants

The subjects of this study were selected from the subject pool of 120 students. Eighty students (40 male and 40 female) met the criteria considered for the purpose of this study. In other words, students who scored between +1 and -1 standard deviation above and below the mean were selected and randomly assigned into concept mapping group (CM) and non-concept mapping group (NCM). They had five years of experience in learning English at high school. Their ages ranging from 16 to 17 years of age and it was their first exposure to learning English vocabulary through concept mapping.

## 3.2 Procedure

This study proceeded through the following stages: First, an OPT proficiency test was administered to 120 Iranian preuniversity male and female students in order to choose a homogeneous sample. The selected samples randomly assigned as CM (20 males and 20 females) and NCM (20 males and 20 females) groups. A researcher-made test of vocabulary was administered to the control and the experimental groups as the pre-test. Before the administration of the test, it was piloted with 30 subjects with similar characteristics to the target sample. This test was composed of 25 items in multiple-choice format. Students in the CM group received treatment. More specifically, the teacher chose the topic related to a theme such as friendship, and wrote the word or phrase on the board, then asked the students to give any words they can think of related to this theme. For example, for the key word of friendship, students expressed the words such as trusting, helpful, sharing, love, pact, friendly, relationship, and agreements. Next, the teacher created a composite class list on the board, having the students group the words into categories when possible and helping the class agree on labels for the categories. The teacher pushed the students to think in new order, for example, finding words about enmity, dislike, disagreement, hate, hatred and so forth. After categorizing the new words, the teacher suggested important words not proposed by the students and asked them to try to place them in an appropriate group. The teacher then elucidated how new words relate to familiar words and concepts and wanted students to relate stories about friendship or experiences that they or their friends or relatives have had. The NCM group was taught in a usual, traditional manner, based on GTM.

At the end of the treatment, all the subjects were given a vocabulary test, one with the same nature and characteristics as the first vocabulary test, as a post-test. It is worth noting that prior to the main administration, this test was also piloted to estimate the reliability and item characteristics. KR-21 formula was used to confirm the test reliability. The reliability of the tests turned out to be 0.84 and 0.87.

#### 4. Results

An independent sample T-test and Analysis of covariance was performed to examine the effect of CM strategy instruction on Iranian Pre –university students' English vocabulary learning. Statistical properties of random auxiliary variables (pre-test) and academic achievement dependent variable (post-test), and the results of the independent T-test and control groups are shown in Table 1.

Variable	Group	М	SD	SE	MD	Т	DF	Р
	exp	12.8500	1.28203	.20271	-0.2850	-1.055	78	0.298
Pre-test	con	12.8625	.80851	.80851				
Post-test	exp	16.8250	1.06548	.16847	3.000	10.995	78	0.000
	con	13.0625	.80214	.12683				

Table 1. Descriptive analysis of the pretest and the posttest and the results of the independent T-test of the study

The results as shown in table 1 indicated that students in the concept mapping group obtained higher mean post-test scores on vocabulary (M = 16.825, SD = 1.654) than the control group (M = 13.0625, SD = 0.802). There is a difference between the mean of NCM group and the mean of CM group in post-test, and this difference is significant (t=10.995, p = 0.000), but it should be noted that this difference was not significant in pre-test.

Table 2.	Mean	and	the	adjusted	mean ir	the post to	est
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S	ource	Post-test	Adjusted Mean		
	М	SD	М	SE	
Ex	16.8250	1.06548	16.828 <sup>a</sup>	.121	
Co	13.0625	.80214	13.059 <sup>a</sup>	.121	

This table shows the adjusted achievement mean in the post test, the effect of the auxiliary random variables is statistically removed. It indicates that the means of the CM group compared with the NCM group, is in the higher place. The Summary of the results of covariance achievement in eliminating the interaction between CM and NCM groups is shown in Table 3. this study was followed up univariate analysis of covariance (ANCOVA) to further investigate the

main effect of the independent variable i.e. the instruction of concept mapping strategy on the dependent variable (the students' scores on English vocabulary), controlling for the effect of pre-tests as covariates.

Source	sum of squares	df	Mean squres	F	Sig	Eta
Pre-test Between groups	32.835 197.0114	1 1	32.853 197.014	30.292 190.831	0.000 0.000	0.282 0.801
In groups Total	84.465 296.300	77 79	1.086			

Table 3. The Results of ANCOVA in control and experimental groups

As shown in table 3, the F value is F = 190.831 which is significant at p = .000, eta squared = .801. It suggests that the instruction of the concept mapping strategy had a positive effect on the students' English vocabulary test. The result indicated that students in the CM group showed significant growth in learning vocabulary in contrast to the students in the NCM groups. It can be concluded that CM as a teaching strategy can affect on students' vocabulary. Therefore, the first null hypothesis as CM strategy instruction does not have any effects on Iranian Pre-university students' English vocabulary is rejected.

Table 4. Mean differences between the two groups of males and females

Gender	М	SD	SE	MD	Т	Р
Male Female	1.7125 1.5250	2.71259 2.524634	.45052 .39337	. 48750	.647	.522

As can be seen in table 4, mean scores of males and females are 1.7125 and 1.5250 respectively and mean difference (MD) is 0.487 Calculated 't' value is not significant which clearly shows that males and females do not differ significantly in their mean gain scores when taught through CM. Therefore, the second null hypothesis as there is no difference between male and female in learning English vocabulary using CM stands accepted.

### 5. Discussion

The statistical analyses of the first research question indicate that utilizing CM in vocabulary instruction enhances vocabulary learning for the CM group. In other words, the results are in favor of employing CM in teaching words. This finding is consistent with the previous studies such as Lui, Chen and Cho (2010); Carrell, Pharis and Liberto (1989) and Dolehanty (2008). This positive impact of concept elaboration techniques can be attributed to the fact that in CM the relationships between words are explored, and thus, more ties among them are made in the lexical knowledge network of the learner. There are several possible explanations for the beneficial effects of concept mapping. Making word meanings and relationships visible is a way to involve students actively in constructing word meaning. CM, organizers, or other relational charts not only graphically display attributes of meanings, but provide a memory organizer for later use (McCarville,2000). Another reason is provided by Cicognani (2000), holding that by the visual representation of keywords on a map, a learner is able to refine language and vocabulary, identify the key issues, organize these key issues into a meaningful chart, and reuse the map in the future with a reasonable success. The learners do not get lost; they have a referring map to which they can come back to review previous steps and to organize the new information.

Regarding the second question investigating whether there is any difference between males and females in learning vocabulary using CM, the finding showed that with the effective use of CM strategy in vocabulary learning , females could perform and participate in vocabulary lessons equally as males do. This study is in agreement with the results of the study conducted by Abayomi (1988) , Bello and Abimbola (1997), Ahlberg and Ahoranta (2004) and Kaur (2012) who revealed insignificant difference in the mean gain scores of boys and girls when taught with the help of CM. On the other hand, this finding is in conflict with the observation of Boujaoude and Attieh (2003) who revealed better performance of female students. As the related literature shows, there are some contradictory findings over the role of gender. But, much of the above-mentioned research confirmed that there is no significant difference between male and female by the use of concept mapping as a study tool.

By incorporation of strategy-based instruction in language education, teachers can assist learners to become autonomous and self-regulated. From the theoretical point of view, the findings of the current study will enrich the existing accumulated body of knowledge regarding vocabulary learning strategy instruction and depth of vocabulary knowledge. However, that mere construction of such maps without discussion is not effective (Stahl and Vancil, 1986).

## 6. Conclusion

Specifically, the results showed that after receiving English vocabulary lessons integrated with the CM strategy, the CM group performed significantly better than the control group. Thus, employing the concept mapping strategy can be seen as having a positive effect on English vocabulary learning. The matter of vocabulary learning is regarded to be of more importance in EFL contexts where learners have less exposure and input to language compared to ESL contexts.

The implication is that teachers should change traditional methods of instruction such as memorizing definitions to more intensive instruction aimed at producing richer, deeper word knowledge. Mapping of vocabulary allows students to use categories to create a visual display of a new word or concept. Students can use their known vocabulary to elaborate a definition. By comparing new words to known words, students can also fit new words into already existing conceptual networks. This is substantially more effective than having students look up words in the dictionary or relying solely on understanding new words through context. Students using mapping can provide examples and non-examples of a new word or concept, which causes the brain to make mental pictures based on personal experiences. CM allows students to think about and to recall new words, use new vocabulary and understand the nuances of language. This is certainly a topic that deserves further studies.

In order to generalize the results for larger groups, the research should be extended its time and the study should have been involved more participants at different levels. The present study did not examine the participants' opinions about their experience in learning vocabulary through using CM. These points of view could surely have given valid and reliable insights to the researcher to judge, discuss, and draw conclusions on the findings of the study. Thus, it seems necessary for future research to provide a structured interview process for the above purposes.

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