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The Impact of Presenting Semantically Related Clusters of New Words vs. Semantically Unrelated Clusters on Iranian Intermediate EFL learners' Vocabulary Acquisition

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Abstract
This study investigates the impact of presenting semantically related clusters of new words vs. semantically unrelated clusters on Iranian intermediate EFL learners' vocabulary acquisition. Three groups of participants studying at Isfahan were presented new words through "The Oxford Picture Dictionary" and "504 Absolutely Essential Words" to one group in semantically related words as the first experimental group and the other group in semantically unrelated words as the second experimental group. The control group was presented new words through six reading texts from "Reading through Interaction". The results of the study indicated that the group which had been taught the semantically unrelated word clusters outperformed the group which had received semantically related word clusters in the post-test. The findings of the study provide evidence that presenting new words to EFL learners in semantically related sets may impede vocabulary acquisition due to interference impact of similar words with each other. EFL learners have to discriminate between the items of similar words and this can obstruct their vocabulary acquisition and retention.
Key terms: semantically related clusters, semantically unrelated clusters, vocabulary acquisition, retention

INTRODUCTION

As vocabulary acquisition is a major area for language learning, the use of effective strategies to improve this area is of high importance (Leeke & Shaw, 2000). The use of these strategies facilitates second/foreign language learning (Atay & Ozbulgan, 2007). As Oxford (1993, 1996) states, explicit instruction will be given to learners, and it must be proficient with learning strategies. Luke (2006) believes that the explicit strategy instruction has a significant impact on learners' performance. As Tagashira, Kida and Hoshino (2010) state, in the realm of vocabulary acquisition presenting words in

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semantically related and semantically unrelated sets are most popular techniques for introducing words in foreign language classes. Tinkham (1997) states that "thematic clustering based upon psychological associations between clusters of words and a shared thematic component" (p.14). Two important consequences of increasing vocabulary knowledge in second/foreign language learners are facilitating the communicative power of learners and empowering their comprehension of the target language. Therefore, finding the best ways of packing vocabularies in their most beneficial ways which facilitate learning and comprehension is very important.

One controversial issue in second language acquisition (SLA) is the connection of L2 words to the conceptual system (CS). In Revised Hierarchical Model (RHM) proposed by Kroll and Stewart (1994), bilingual memory organization has been considered as a composition of three elements: L1 lexicon, L2 lexicon and the CS. The relation between these three elements changes the function of L2 proficiency. This model shows that as L2 proficiency increases, the links between L2 words and CS develops. As the review of Desmet and Duyck (2007) shows, a lot of other studies have indicated the facilitating role of cognates in word processing.

Simultaneously, the focus shifted from studying meaning and changes in meanings towards studying the relations between words and the meaning that was seen as emerging from which. The strategy of presenting vocabularies in groups of words whose meaning would fall under one superordinate concept is semantic clustering (Finkbeiner & Nicol, 2003; Tinkham, 1993; Waring, 1997). As what Tinkham states, semantic clustering is grouping of words that have semantic and syntactic similarities and fall under one superordinate concept and also come from a single syntactic word class. For example the words 'peach, apricot, apple and pear' fall under the concept of "fruit" and the syntactic word class of "nouns".

Due to the incremental nature of vocabulary acquisition, educational plans and learning programs need to boost learner's engagement by embodying systematic, principled, and long term practices and tasks. Naturally the human mind trends to make associations between previous and last information. In other words, entering a schema to the mind the other associated schemas alert and makes links between previous and new schemas. The idea of presenting new words and chunks in semantically related clusters has its root and origin in educational psychology. It seems the earliest and most influential of semantic clustering technique belongs to Ausuble. As a psycholinguist' he suggested (Ausuble, 1968), that superordinate concepts can be presented in advance in order to activate the existing schema in the mental lexicon, which prepares the organization of new lexicon into those pre-activated slits.

Research questions

Within this framework, the current study seeks to answer the following questions:

1. Does semantic clustering of words exert a significant effect on the acquisition of vocabulary by Iranian intermediate EFL learners?

2. Does semantically unrelated clustering of words exert a significant impact on the acquisition of new vocabulary by Iranian intermediate EFL learners?
3. Is there any significant difference between the two techniques of presenting new vocabulary (Semantically Related vs. Semantically Unrelated Clusters) on Iranian EFL learners' vocabulary acquisition?

Research hypothesis

Accordingly, the following hypotheses are developed to answer the above mentioned questions:

1. Semantic clustering of words does not exert a significant effect on the acquisition of vocabulary by Iranian EFL learners.
2. Semantically unrelated clustering of words does not exert a significant effect on the acquisition of vocabulary by Iranian EFL learners.
3. There is no significant difference between the effects of the two techniques of presenting new vocabulary (Semantically Related vs. Semantically Unrelated Clusters) on Iranian EFL learners' vocabulary acquisition.

LITERATURE REVIEW

Assorted large scale surveys of second language vocabulary have been accomplished up to the present time (Read, 2000). The stimulant for that came from two slides: first, there was a general accommodation in consideration of vocabulary as one of the most significant aspects of second language learning (Palmer, Richard & Rodgers, 2001). Second, some researchers made a workout to determine the amount of desired vocabulary by second language learners to be able to move forward without concerning with too much difficulty (Hirsh & Nation, as cited in Ebrahimi & Akbari, 2015). All the time, looking for the most effective approach has been a primary concern for enhancing and developing foreign language learners' vocabulary knowledge (Etern & Tekin, 2008).

Naturally, most learners are concerned about how to handle the related tasks of vocabulary assignments. This has been detailed by a variety of interviews, case studies and questionnaires accomplished in this field (Gu & Johnson, 1996; Jones, 1995; Lawson & Hogen, 1996; Porte, 1988; Sanaoui, 1995). Lewis (1993) argues that vocabulary teaching should be part of the syllabus and the center of language teaching, because language consists of grammatical lexis, not lexicalizes grammar. One of the pioneers who highlighted the importance of vocabulary in the academic achievement was Becker (1977). He emphasized on the vocabulary diversity as a primary cause of academic failure and success of language learners**.**

RECEPTIVE AND PRODUCTIVE VOCABULARY KNOWLEDGE

Learning burden of a word depends on the distinction between the receptive and productive vocabulary (Nation, 2001). As Nation (2001) points out, knowing a word involves form, meaning and use. Receptive vocabulary use is seen as perceiving the form of a word and then retrieving its meaning. But, productive vocabulary use is trying

to express the meaning, and producing appropriate forms. The prominent function of receptive vocabulary use is in listening and reading, while the productive vocabulary use is in speaking and writing. As Nation (2001) believes, recognition level is easier than production one.

THEORETICAL AND EMPIRICAL PERSPECTIVES

There are more than 600,000 words in English language (Smith, 1982). He also referred to the appraisals and estimations of Seashorem and Eckerson (1940) that believed the average college undergraduates know about 156,000 words (96,000 ' derived' , 58,000 ' basic words' , and about 2000 'rare'), to emphasize this capability could not have come from 156,000 trips through the dictionary, 156,000 flash cards or 156,000 fill in the blank tasks. The valid estimation of vocabulary size is difficult. In this regard, Nation (1993) argued that the true realm of vocabulary knowledge would be exaggerated by these estimations. Even with more conservative estimations such as that of 40000 words suggested by Nagy and Herman (1987), it is obvious that we have not been taught each of the words that we know. Much of incidental vocabulary acquisition comes from context through a reading. A small portion of vocabulary learning is from semantically related and unrelated sets.

According to Finkbeiner and Nicol (2003), in recent relevant literature about different ways of presenting new words to EFL learners, the main focus lies on semantic clustering. It was in the second half of 20th century when the use of word associations became important and prevalent in vocabulary teaching (McCarthy, 1990). Although not warranted by research, the belief behind using this method in vocabulary instruction was that presenting new words in semantically related sets facilitate vocabulary building. Wilcox and Medina (2013) state that classification of words based on their meaning is semantic clustering which means presenting words in groups with the same hypernym. They also believe that many available English textbooks present new vocabularies in semantic clusters such as 'body parts', 'sports', etc. that fits the topic-center approach to L2 teaching. In this approach, the communicative needs of learners will be met by books.

Agreements and disagreements for the presentation of vocabulary in related sets are mainly based on theory aspect of vocabulary acquisition and not on experimental evidence. Neuner and Dunbar (1992) introduced five logical reasons for teaching related words in clusters:

1) It is easier to retrieve words from memory,
2) It requires less amount of learning to learn words in clusters,
3) It shows learners how knowledge can be organized and classified,
4) It reverses and reflects the way such information is stored in the mental lexicon,
5) It clears the meaning of words by showing how they are related to and distinguished from other words in that cluster.

Channell (1981) defended the fact that it can be a subtle way of presenting words of related meaning together. In this way learners can see the differences between them and a scope of defined area of meaning. Semantic theory presents a systematic framework of language vocabulary. According to Channell (1981), learners should be taught L2 vocabularies in semantic clusters which are word groups sharing certain semantic features. Those vocabularies link together by networks called "semantic fields".

The most important and fundamental principle in the arguments which support presenting vocabulary in semantically related clusters, derived from linguistic theory of Semantic Field which sets organized vocabulary list by interrelatedness between words rather than being presented in random list (Aitchison, 1994). Semantic Field Theory which was the point of convergence of many researchers gained its prosperity by the exposition of the idea of German scholar J. Trier in 1930s, whose work "opened a new aspect in the history of semantics" (Ullmann, 1957). This theory presented the technique which considers that there is an organization of semantic field in human brain (Aitchison, 1994; Carter & McCarty, 1988; Grandy, 1992; Lewis, 1997; McCarty, 1990; Rogers, 1996) which tends to retain new words on the foundation of conceptual mapping and leveling in the brain (Aitchison, 1994, 1996). Learning some items facilitates and reinforces learning of other items which is an important merit for this approach (Seal, 1991; Wharton & Race, 1999).

As mentioned earlier, semantic field theory suggests that the lexical content of a certain language is best treated as a combination of interrelated networks of current relations between words, not as a mere mass of independent words or an unconstructed list of words (Stubbs, 2001). It is better to state that we do not deal with random word lists, but with systematic ones. Course book writers mostly consider the ability to distinguish current differences between words with related meaning domain in EFL course books. Based on the recent survey (Beaven, 1995; Newbrook & Wilson, 2000), it seems that many (if not most) EFL leaners are exposed to new word sets in pre-organized language vocabulary semantic clusters (topic-related vocabulary classification). It revealed that semantic clusters applied quiet desirably into most current EFL/ESL textbooks (Beaven, 1995; Newbrook & Wilson, 2000).

Beside opposite and consistent believes about semantic clustering, some researchers, such as Davis (2012) and Papathanasiou (2009) have chosen moderation and suggested mixed results. Despite all those supporting notions for theoretical base of semantic clustering, Finkbeiner and Nicol (2003) present considerable debates against it. Theories such as Interference theory (Baddeley, 1990) declare that interference may occur when L2 vocabularies have common semantic hierarchy. According to a research conducted in 1930s when a set of similar words were presented at the same time, synonyms were learned poorly (McGeoch & Mc Donald, as cited in Erten & Tekin, 2008).

Nation (2000) adds that, since words compete for their tracks in memory, their acquisition and retention would be hold back. So, according to Interference Theory, it is better not to present words in semantically related groups. In the background, the

mother tongue might have positive and negative influence and causes interference. Within the framework of this study interference is understood as the process and results of the inter language of language systems under the condition of bilingualism, arising within individual vocabulary acquisition of a non-mother tongue and expressed in deviations of the second language under the influence of the native one, or of a second foreign language under the influence of the first. Traditionally, the educational process is faced with interference that is analyzed on grammar, phonetic and still lexical levels (Rogoznaya, 2001).

In accordance with Interference Theory, Hunt and Elliot (1980) express that since similarity may confound the mind, distinctiveness can help organizing it. It is called distinctive hypothesis which regards similarity as a disincentive factor for organizing the concepts in mind. In this regard, Wilcox and Medina (2013), emphasized on the importance of distinctive hypothesis and its attention to increase the distinctiveness of the feeding information which help a better retention and acquisition of words. So, it recommends to present new words in nonrelated categories. Scholars solicited different theories as evidence for their arguments in the field of vocabulary acquisition. One such theory is *interference theory*, according to which when words are similar and share the same components, they may interfere with each other, and it consequently leads to their difficult retention (Baddeley, 1990; Hoshino, 2010; Papathanasiou, 2009; Tinkham, 1993, 1997; Waring, 1997). In short, interference theory leads to learning difficulties in case of similarity between to-be-learned information and previously learned one (Waring, 1997).

Although the interference in vocabulary acquisition has been frequently observed in learning process (Papathanasiou, 2009), unfortunately, this phenomena was given inadequate attention, and only in some papers could reference to interfering mistakes causing interfere in vocabulary acquisition could be put down. Another theoretical perspective is *distinctiveness hypothesis* (Hunt & Eliot, 1980; Hunt & Mitchell, 1982), which assumes that the dissimilarity of presented information and words to be learned facilitates and promotes L2 learning. According to this hypothesis, dissimilar and distinct items can better be acquired by learners (Eysenck, 1979).

METHOD

Participants

Sixty intermediate English learners from different classes of Rahjoye Danesh Language Institute in Esfahan, Fouladshahr at the age of 16-21 participated in this study. To ensure confidentiality, all the participants were coded by numbers. Then, the researcher randomly divided them into three groups, two experimental groups and a control group.

Instruments

The researcher used the concrete vocabularies of Oxford Picture Dictionary (OPD) (2006) in the first experimental group who were supposed to learn semantically related words, and she used semantically unrelated vocabularies of 504 Absolutely Essential

Words (1996) book in the second experimental group. The control group received six readings from Reading Through Interaction, Book 3, by B. Wegmann, M. Knezevic, and M. Bernstein (2001), which contained a mixed set of semantically related and unrelated vocabularies.

Procedure

At the beginning, the researcher selected 60 learners, at the age of 16-21 who were studying at the intermediate level of EGP (English for General Purposes) in Rahjoye Danesh Language Institute in Isfahan, Fooladshahr. All the procedures were clearly explained for learners. Then, they were divided into two experimental groups and control group, each of which contained 20 learners. Although each term took two months and a half, the researcher's study was done during four weeks of that period. Three sessions were held in each week. The researcher asked the teacher to teach five concrete semantically related words from OPD (2006) to the participants of the first experimental group at the end of each session, and five semantically unrelated words from 504 (1996) to the participants of the second experimental group. In the control group, learners received 6 readings during 12 sessions from Reading Through Interaction, Book 3, by B. Wegmann, M. Knezevic, and M. Bernstein (2001).

To ensure that learners did not already know the words and to obtain the first set of quantitative data, at first three pretests were designed by the researcher and were administered by the teacher separately in three groups before starting the treatments. The pretests of the first and second experimental groups were two 30 item multiple choice tests. The tests were based on the vocabularies of OPD (2006) and 504 Absolutely Essential Words (1996) that were supposed to be taught during the term. The pretest of the control group was also a 30 item test which contained the vocabularies of those readings that were supposed to be worked on in this group.

In the first experimental group, 60 names of animals from OPD (2006) were selected to be taught. Each session the teacher taught five of them to the learners in a two-phase procedure. In the first phase, she defined the intended word and motivated learners to guess the name of that animal, and in the second phase, she showed the picture of that animal to the class and completed her explanations. She also asked learners to add any other information about that animal.

In the second experimental group, the first 60 words of 504 Absolutely Essential Words (1996) were taught. The selected words were chosen from lesson one to five of 504 (1996). In each session, the teacher first asked the participants to close their books and then she taught five of those words to the learners in a three-phase procedure. In the first phase, the teacher wrote an example sentence on the board which contained the underlined intended word. Then, she asked learners to read it and guess the meaning of the underlined word. In the second phase, she either confirmed learners or modified their explanation by giving them some clues. In the last phase, the teacher wrote the phonetic of the word on the board and completed the meaning of it by giving more

explanations. She repeated this process for the next four words, and then she asked learners to open their books and work on more examples of each word.

In the control group, in the first session the teacher handed over the learners some printed versions of readings from Reading through Interaction, Book 3, by Wegmann, Knezevic, and Bernstein (2001), that each reading contained some blanks. Then she asked them to work on the readings and think about the best options to fill them. In the next session, she asked one learner to read one sentence with a blank and give the answer. Then, she checked the correctness of the given answer, and asked other learners to give their answers too. Then, they considered the next blank. At the end, they finished that session with reading the whole text and reviewing the words again.

At the end of the term, the researcher administered the posttest to collect the second set of quantitative data and check the impact of the treatments on the learners' amount of learning. The 30 item multiple choice posttests contained the same taught words in each class, but in different contexts from the pretests. Then, the researcher compared the results of the pretests and posttests of the two experimental groups and the control group with SPSS.

Data analysis

An integral placement test was performed to determine if learners were homogenous or not. Learners' standard deviation above and below the mean were selected for the study. Then they were assigned to the groups randomly.

Examining the amount of vocabulary learning was the most important goal of this study. To achieve this goal, an integral placement test was performed to determine if learners were homogenous or not. Learners' standard deviation above and below the mean were selected for the study. Then they were assigned to the groups randomly. 60 intermediate learners were divided into three groups of twenty, two experimental and a control. Semantically related clusters of words were given to the participants of the first experimental group, semantically unrelated clusters of words were given to the participants of the second experimental group, and six randomly selected reading passages were presented to the control group. After administering the treatments during the term, the data were collected and necessary statistical procedures were done through SPSS to check the acceptance or rejection of the research hypothesis. In the following, the related data to the results of each group will be presented.

Table 1. T. test Results

Statistical Indicator	Pretest	Posttest
Number of the Participants	20	20
Mean	18.10	17.35
Standard Deviation	2.92	2.66
t statistics		3.000
Significance Level		0.007

According to achieved results (Table 1), the mean score of the first experimental group is equal to 18.10, and the standard deviation is 2.92. The mean score of posttest is 17.35 and the standard deviation is 2.66. As can be seen, the mean score of the posttest is slightly smaller than the mean score of the pretest. According to the t- test statistics and achieved significance level, this difference is statistically significant (t=3, sig. <0.05). Therefore, semantic clustering of words had adverse effect on the strength of learners' vocabulary acquisition. Hence, the first hypothesis "semantic clustering of words does not exert a significant effect on the acquisition of vocabulary by Iranian EFL learners" is confirmed.

The result of the t. test for two dependent variables, which test the first hypothesis, is shown in the following table (Table 2). In addition, the statistical indicators of each of the two sets of pretest and posttest scores are reported:

Table 2. The Results of t-test

Statistical Indicator	Pretest	Posttest
Number of the Participants	20	20
Mean	18.50	22.35
Standard Deviation	2.61	2.23
t statistics		12.77
Significance Level		0.000

According to achieved results, the mean score of the second experimental group is equal to 18.50, and the standard deviation is 2.61. The mean score of posttest is 22.35 and the standard deviation is 2.23. As can be seen, the mean score of the pretest is slightly smaller than the mean score of the posttest. According to the t- test statistics and achieved significance level, this difference is statistically significant (t=12.77, sig. <0.05). Therefore, semantically unrelated clustering of words had positive effect on the strength of learners' vocabulary acquisition. In this way, the second hypothesis that says semantically unrelated clustering of words does not exert any significant effect on the acquisition of words by learners, is rejected. The results of comparing the mean of pretest scores of the three groups by one-way ANOVA are shown in the following table (Table 3):

Table 3. The Results of One-Way ANOVA of the Pretest Scores

Source of Change	The Sum of Squares	Degree of Freedom	The Mean Square	F Statistics	Level of Significance
In-group	3.23	2	1.62		
Within-group	385.75	57	6.77		
Total	388.98	59	-	0.239	0.788

According to the results of the above table (Table 3), there is no significant difference between the pretest scores of the three groups (F=0.239, sig.>0.05).

Therefore, to test the third hypothesis, the posttest scores are just used. The following table (Table 4) will show the results of one-way ANOVA of the posttest scores.

Table 4. The Results of One-Way ANOVA of the Posttest Scores

Group	Mean	Standard Deviation	F Statistics	Level of Significance
Experimental group 1	17.35	2.66	27.365	0.000
Experimental group 2	22.35	2.23		
Control	18.10	1.97		

Based on the results of Analysis of Variance of the posttest scores of three groups of experimental 1, 2 (Table 4), and control, it can be concluded that there is a significant difference between the posttest scores ($F=27.265$, sig. <0.05).

DISCUSSION AND CONCLUSIONS

As having an effective communication in this communicative era needs a good knowledge of vocabulary, the acquisition of words is of high importance (Leeke & Shaw, 2000). Therefore, language educators are always trying to find new strategies to facilitate vocabulary acquisition. Although, it is a sub skill in learning languages, increasing vocabulary knowledge improves communicative power of learners and their comprehension of the target language. Because, the lack of word knowledge in understanding the contexts not only impedes learners' success in language classes, but also can be an obstacle in front of having effective communication with others (Decarrico, 1995 as cited in Celce-Murcia, 2001).

According to what Tagashira, Kroll and Hoshino (2010) believe, semantically related and semantically unrelated presentations of words are two most popular techniques. The researcher sought to improve learners' vocabulary acquisition by investigating the effects of presenting words in semantically related and semantically unrelated sets of words (independent variable) on the vocabulary acquisition (dependent variable).Several findings were obtained from the results of this study and the direct observations of the researcher and reports of the teacher:

First, the amount of vocabulary acquisition of the learners of the second experimental group to which semantically unrelated clusters were presented increased, and their performance on posttest was significantly better than the learners of the first experimental group.

Second, as what Eyseck (1979) cited in Mirjalili, Jabari and Rezai (2012) believes, distinct or non-similar items are learnt easier than indistinct items which is known as distinctiveness hypotheses, the studies of Tinkham (1993) and Waring (1997), and also the direct observation of the researcher in the second experimental group to whom semantically unrelated clusters were presented, the unpredictable category of the

words made the learning situation of the second class a more convenient setting for learning.

Third, establishing an exciting atmosphere in the class increased learners' tendency to participate in class activities, and learners did not get bored by the semantically unrelated clusters of words. On the contrary, they were enthusiastically eager to offer their examples for each word.

Fourth, the relative impacts of presenting semantic related clusters of words cannot be ignored, but it was not as considerable as semantic unrelated clusters. Learners of the first experimental group got slightly bored by the massive amount of semantically related words, because they could not set them in proper schemas in their mental lexicon.

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