# Full length research paper

# The effects of code-mixing, thematic clustering, and contextualization on L<sub>2</sub> vocabulary recognition and production

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To investigate the effects of code-mixing, thematic clustering, and contextualization on  $L_2$  vocabulary recognition and production, a sample of 120 EFL students of Zaban Negar institute in Qazvin, Iran were divided into three groups. Each group received vocabulary instruction in one of the aforementioned techniques. Multiple-choice and fill-in-the-blanks vocabulary tests were used to measure the participants' recognition and production of the target words. The obtained data were analyzed using two separate one-way ANOVA procedures. Results indicated that there were no significant differences among the effects of code-mixing, thematic clustering, and contextualization on  $L_2$  vocabulary recognition. But significant differences were observed among the effects of code-mixing, thematic clustering and contextualization on  $L_2$  vocabulary production. The participants of the thematic clustering group performed better than the participants of the code-mixing group on the production test. But there was no significant difference between the code-mixing and contextualization groups. In addition, the participants of the thematic clustering group performed better than the participants of the contextualization group on the production test.

**Key words:** Code-mixing – thematic clustering, contextualization, vocabulary recognition, vocabulary production.

#### INTRODUCTION

Teaching vocabulary through different methods of presentation has long been a matter of concern for researchers in the field of second language teaching/learning, and one of the main struggles for teachers to be accounted for. Over decades, many studies have been done all over the world to investigate how L<sub>2</sub> vocabulary can be learned more effectively, and how teachers can help learners achieve this goal; but few studies have been conducted to compare three of the most commonly-used methods of vocabulary teaching all in one research. This study aims to investigate the effects of three different methods of vocabulary presentation (codemixing, thematic clustering, and contextualization) on L<sub>2</sub> vocabulary recognition and production. More specifically,

- 1. Are there any significant differences among the effects of code-mixing, thematic clustering, and contextualization on EFL learners' vocabulary recognition?
- 2. Are there any significant differences among the effects of code-mixing, thematic clustering, and contextualization on EFL learners' vocabulary production?

#### **REVIEW OF THE RELATED LITERATURE**

During the past few decades, the fortunes of vocabulary learning and teaching have waxed and waned. During its relatively long and convoluted history, vocabulary teaching has been accompanied with a substantial amount of controversy. Thanks to the recent developments in the field, much of the controversy has now been

the present study attempts to answer the following research questions:

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resolved. For instance, the traditional decontextualized repetition and memorization of word lists has now lost much of its credibility. There is currently more or less a consensus as to how words should 'not' be learnt. But when it comes to how they 'should' be learnt, there is still no shortage of controversy. The advent of new strategies or techniques of vocabulary teaching has further heated the ongoing debate as to which method of vocabulary teaching is the best. This study aims to provide a review of recent research on vocabulary learning and to clarify areas that need further exploration.

In recent years, there has been an interest in vocabulary learning strategies, given that they are found to facilitate foreign language vocabulary learning. Cook (2001) enumerates the following strategies for understanding vocabulary: guessing from context, using a dictionary, making deductions from the word-form, linking to cognates, repetition and rote learning, organizing words in the mind, and linking to existing knowledge. From guessing to possible dictionary use, and note taking to rehearsal, and contextual activation, vocabulary learning is a dynamic process involving metacognitive choices and cognitive implementation of strategies (Gu, 2003). The present study intends to compare the effect of three of the afore-mentioned techniques on vocabulary recognition and production; that is, code mixing, thematic clustering, and contextualization.

#### Code-mixing

Ayeomoni (2006) defines code as "a verbal component, that can be as small as a morpheme or as comprehensive and complex as the entire system of language" (p. 91). Woon (2007) defines code-mixing as "change of one language to another within the same utterance or in the same oral/written text" (p. 1). According to Celik (2003), code-mixing is the mixture of two languages which involves one word from one language in the syntax of another, with the majority of words coming from the latter language. The present study adopts Celik's definition.

Support for code-mixing comes from Spardlin et al. (2003), who showed how language is represented in the bilingual mind. They talk about functional-lexical code-mixings as constituents formed by a functional morpheme from one language and a lexical morpheme from the other. Jisa (2000) asserts that, intersentential code-mixing engages the use of sentential constituents from two languages in the same discourse. Each sentential constituent follows the grammar of its respective language. Intrasentential code mixing happens within the confines of a single sentence or clause constituent. Code-mixing involves a number of implications in L2 vocabulary teaching. One is that when a vocabulary item is presented to students through code-mixing, they will be able to rely on their existing morphosyntactic knowledge

to use the new vocabulary for other syntactic functions (Celik, 2003).

The relevant literature suggests that, there are mixed feelings towards code-mixing. A number of positive viewers have pointed out several merits of code-mixing. One benefit of this method of vocabulary presentation, as Celik (2003) describes is time; that is, both preparation and implementation of this method require a minimal amount of time. Another benefit is that, this technique does not require additional materials. As Ying (2005) contends, those who look at code-mixing from the negative perspective, see it as a disease, something to be avoided. After all, this technique does involve a number of constraints. All EFL learners in a classroom must share the same L1. There are also several unresolved issues in this domain. Ying (2005) points out that previous studies just focused on the structural constraints of code-mixing or just on the pragmatic functions of using two codes instead of one. He concedes that "no detailed analysis has been done on any nonmainstream code-mixing patterns, nor has any work been done on how distinctive bilingual speech patterns index or reflect contrasting social categories" (p. 529).

## Thematic clustering

According to Tinkham (1997), a thematic cluster is a combination of words of different parts of speech that are all closely associated with a common thematic concept. so thematic clustering is based upon psychological associations between clustered words which share the same thematic concept. Thematic clusters should not be confused with semantic clusters. Although sometimes the clusters of words based on semantic and thematic criteria partially overlap, many clusters are easily perceived as examples of one kind or the other. As an example, it is clear that a word set like 'dish, bowl, plate' is a different sort of cluster from 'library, whisper, quiet'. Tinkham believes that while semantic clusters confuse learners and inhibit vocabulary learning, thematic clusters tap into both cognitive and linguistic processes and result in better word learning and improved reading skill.

One way of identifying thematic clusters is the so called 'frame semantics', based on which, people know a word by understanding the background frames that conjure up the concept which the word denotes. According to Fillmore and Atkins (1992), "within such an approach, words or word senses are not related to each other directly, word to word, but only by way of their link to common background frames and indications of the manner in which their meanings highlight particular elements of such frames" (p.77). For instance, the verbs buy, sell, change, spend, pay, and cost are said to be linked with nouns like buyer, seller, goods, and money in a 'commercial transaction' frame.

In addition, Ferretti et al. (2001, cited by Corrigan,

2007) give examples in which words activate features, associated with typical thematic roles. For example, the word 'convicting' activates 'guilty', which is a characteristic of 'criminals'.

#### Contextualization

Learners are aware that the final goal of learning English as a foreign language is to be able to use it. The lack of contextualized practice to work on what they have learned impedes their progress towards this goal (Wei, 2007). According to Wei, learners who concentrate too much on isolated short-term retention of form and meaning will not gain communicative competence. As to why most EFL learners do not use this method, Huyen and Nga (2003) hypothesize that "for many learners of English, whenever they think of vocabulary, they think of learning a list of new words with meanings in their native language without any real context practice" (p.13). In a way, therefore, strongly inculcated traditions and learning habits are blamed. The notion of context is central to Wei's (2007) research on vocabulary learning, which allows EFL teachers and learners to see that, word learning is not simply a matter of memorization chore. Broukal (2005) defines the context of a word as "the setting in which the word occurs in speech or writing" (p.

According to Thornbury (2003), short texts are ideal for classroom use, because they can be subjected to lexical study, without taking learners' attention or memory, as may be the case with longer texts. So, learning to cope with short texts is also good preparation for independent reading and listening.

It may be undeniable, of course, that  $L_2$  learners can be expected to require many exposures to a word in context before understanding its meaning (Hunt and Beglar, 1998). At the same time, as Blachowicz and Lee (1991) contend, poorer readers know less about fewer words than do more able readers. So, poorer readers are unmotivated to do the amount of contextual reading necessary to extend their vocabulary knowledge.

Nevertheless, Nation (1995, cited in Richards and Renandya, 2002) concludes that "all vocabulary learning should be in context. Considerable research shows that, the learning achieved in this way can last for a very long time, and this knowledge can be made available for meaning-focused use of the language" (p. 271). In addition, Zimmerman (1997) believes that context, in both written text and meaningful oral activities, can assist the word-learning process. His studies show that, the group with more exposure to the target words in natural contexts through class activities performed better on the posttest. Furthermore, as Webb (2007) contends, "It seems likely that many aspects of vocabulary knowledge may be gained through learning in context. Moreover, context may provide a better chance of gaining

vocabulary knowledge than decontextualized learning from translations, definitions or synonyms" (p. 64).

#### **PREVIOUS STUDIES**

Several studies have investigated the effect of various methods of vocabulary teaching/learning strategies on both vocabulary recognition and recall. Tinkham (1997) compared the effects of semantic and thematic clustering on the learning of second language vocabulary. He argues that semantic clustering of new  $L_2$  vocabulary items serves as a detriment to the learning of vocabulary while thematic clustering serves as a facilitator of learning. The findings of Celik (2003) suggests that, code-mixing has long lasting effects in the internalization of the lexical items. They show that careful use of codemixing leads to appropriate teaching and learning of new vocabulary, especially in classrooms where the  $L_2$  learners share the same first language.

Ying (2005) investigated the social distinctiveness of code-mixina styles (non-mainstream two mainstream) in Hong Kong. The mainstream style is insertional, but the non-mainstream has both insertion and alternation. Then, he investigated the speakers' awareness of the difference between the two patterns. It turned out that both speakers of mainstream code-mixing pattern as well as speakers of the non-mainstream pattern are aware of the difference between the two patterns. Fukkink (2002) studied the effects of instruction on deriving word meaning from context and incidental word learning. He studied the instruction effect on students' skills improvement in determining word meaning from both supportive and less supportive contexts. A low correlation was found between deriving word meaning from context and incidental word learning across the different scoring methods. It was also found that incidental word learning not only involves meaning derivation but also memorization of word form and meaning. Thus, determining word meaning from context integrates with other skills in the incidental word learning process.

Zimmerman (1997) studied the differences between reading and interactive vocabulary and concluded that, there were no significant differences in the amount of self-selected reading between the experimental and control groups in the study. Students who participated in vocabulary instruction improved their vocabulary knowledge as measured by the pre- and post-treatment checklist tests significantly more than the students who did not participate in this instruction. Since both groups of students received approximately the same amount of reading during the study, the researcher attributes this difference to the vocabulary instruction, rather than incidental vocabulary learning through extensive reading. Zimmerman notes that the difference in the perceived effectiveness of vocabulary learning through reading

could be motivated by the greater amount of reading assigned to the experimental group (50% more), assuming that, engaging in more reading helped these learners to perceive the instruction type as more effective.

Although the effect of various methods of vocabulary teaching on different aspects of vocabulary knowledge has been investigated by several researchers, few (if any) have focused on a comparison of three of the most frequently used methods on both vocabulary recognition and production. It is the intention of the present study; therefore, to compare the effects of code-mixing, thematic clustering and contextualization on  $\mathsf{L}_2$  vocabulary recognition and production.

#### **METHODS**

#### **Participants**

A sample of 120 male and female EFL students of Zaban Negar language institute in Qazvin, Iran participated in the present study. The participants were all adult learners of English ranging in age from 18 to 25. They had different educational backgrounds, but they were approximately homogeneous in terms of foreign language proficiency. This is because the institute uses standardized language proficiency tests to place the learners at the right level and administers general proficiency tests under strictly controlled conditions as a criterion for passing the course and proceeding to the next level.

Moreover, a general proficiency test was administered at the outset of the experiment to ensure that the participants were homogeneous. All the participants had already experienced three semesters of language instruction and were now in their fourth semester. Their proficiency level was somewhere between pre-intermediate to lower-intermediate level.

#### MATERIALS AND INSTRUMENTS

For the purposes of the present study, the following materials and instruments were employed:

A Michigan Test of English Language Proficiency (MTELP) was administered to homogenize the participants. It was a three-part, 100-item multiple-choice test containing 40 grammar items in a conversational format, 40 vocabulary items requiring selection of a synonym or completion of a sentence, and reading passages followed by 20 comprehension questions. As to the materials, three different methods of vocabulary presentation were used in three different booklets based on a book entitled "English vocabulary in use by Stuart Redman (2003)". Each booklet contained 10 units based on different topics that were appropriate for pre-intermediate EFL learners.

Each unit contained at least 10 new words. These booklets are further described under procedures. To measure the effectiveness of each method on vocabulary recognition, a 30-item multiple-choice vocabulary test was used, in which items were based on the new  $L_2$  words, which were covered during the course. Another 30-item test in fill-in-the-blank format was used to measure the effectiveness of each method on vocabulary production. It was like a cued production test. To prevent the possibility of the learners providing either synonyms or other words that fitted the context without being the target words of the study, the initial letter of the word in each blank was also given.

#### Procedures and data analysis

Initially, a total number of 155 EFL learners at Zaban Negar institute were selected. Out of this sample, 30 students were excluded either because they did not regularly participate in the usual semester class sessions or because their proficiency level was different from that of the other participants. The data from five other students were also excluded from analysis because they failed to take part in either the recognition or production test. To make sure that the participants were homogeneous in terms of their proficiency level, a proficiency test (MTELP) was administered. The learners whose score was more than one standard deviation above or below the mean were excluded from all subsequent statistical analyses. Then, three booklets containing the same content and manner of organization were designed by the researchers. The teaching materials of each unit of these three booklets were the same, but the manner of vocabulary presentation in each booklet differed from the other two. In the booklet that was designed for the thematic clustering method, each unit contained 10 new words which were connected together through clusters and were presented out of context. For the code-mixing group, the same ten words in each unit were presented in Persian contexts. In other words, the sentences were in Persian and the target words were in English. For the contextualization group, the same new words were used in bold face in English sentences. Each booklet contained 10 units to be taught during 10 sessions. So, in every session at least 10 words were presented.

At the end of the experimental period (10 sessions), in order to assess the participants' ability in recognizing new words in an English context, a 30-item multiple-choice test was given to each of the three groups. In addition, to assess the participants' ability in producing new words in an English context, a fill-in-the-blank test with the afore-mentioned characteristics was administered to the same three groups. Since both the multiple-choice and fill-in-theblank tests were designed by the researchers, their validity and reliability had to be established (although both tests could be presumed to have content validity because they were both achievement tests). To check the validity of the two tests, a standardized vocabulary subtest of the TOEFL test was administered to 30 students along with the newly designed post-tests. The results of a correlation procedure showed that, there was a correlation coefficient of (r = 0.89) between the results of the vocabulary recognition test and the vocabulary subtest of TOEFL. The validity index of the vocabulary production test turned out to be (r = 0.78).

To estimate the reliability of the two tests, the KR-21 formula was used, according to which the reliability of the recognition and production post-tests turned out to be 0.73 and 0.84, respectively. To answer the research questions, the scores on the vocabulary tests of recognition and production were compared using two oneway ANOVA procedures.

#### **RESULTS AND DISCUSSION**

### Investigation of the first research question

The first research question sought to investigate if there were any significant differences among the effects of code-mixing, thematic clustering, and contextualization on  $L_2$  vocabulary recognition. To this end, the scores of the three groups of participants on the vocabulary recognition test were compared using a one-way ANOVA procedure. Descriptive statistics for the ANOVA on vocabulary recognition are presented in Table 1. It can be seen in Table 1 that, the mean score of the thematic cluster group is higher than that of the participants of

Table 1. Descriptive	statistics	of the vo	cabulary	recognition	test.

	N	Mean	Std. Deviation
Code-mixing	40	20.4500	5.34430
Thematic cluster	40	22.8750	3.50229
Contextualization	40	20.8500	5.56339
Total	120	21.3917	4.96593

 Table 2. The result of the one-way ANOVA on vocabulary recognition.

	Sum of squares	Df	Mean square	F	Sig.
Between groups	135.21	2	67.60	2.82	0.063
Within groups	2799.37	117	23.92		
Total	2934.59	119			

**Table 3.** Descriptive statistics of the vocabulary production test.

	N	Mean	Std. Deviation
Code-mixing	40	17.52	6.35
Thematic cluster	40	21.50	5.71
Contextualization	40	15.60	7.73
Total	120	18.20	7.04

contextualization and code-mixing groups. In addition, the participants of the contextualization group have performed slightly better than the code-mixing group participants. To see whether or not the differences among the groups are statistically significant, the oneway ANOVA procedure was used, yielding the following results: Based on Table 2, there are no statistically significant differences among the three groups in vocabulary recognition. In other words, there are no significant differences among the effects of code-mixing, thematic clustering, and contextualization on  $L_2$  vocabulary recognition (sig. = 0.063).

## Investigation of the second research question

The second question attempted to see if there were any significant differences among the effects of code-mixing, thematic clustering, and contextualization on  $L_2$  vocabulary production. To this end, the scores of the participants on the vocabulary production test were compared using another one-way ANOVA procedure. Descriptive statistics needed for the ANOVA on vocabulary production are summarized in Table 3. As it can be seen in the table, the participants of the thematic cluster group achieved better results than the other two groups. Furthermore, the participants of the code-mixing group

outperformed the contextualization group. To see whether or not the observed differences among the groups are statistically significant, another one-way ANOVA procedure was used. The results of the ANOVA on vocabulary production are given in Table 4.

Based on Table 4, it can be observed that there are significant differences among the effects of code-mixing. thematic clustering and contextualization on L2 vocabulary production (sig. = 0.00). To locate the significant differences, a post hoc Scheffe test was used, giving the results summarized in Table 5. From Table 5, it can be concluded that there is a significant difference between the effects of code-mixing and thematic clustering (sig. = 0.031). The participants of the thematic clustering group performed better than the participants of the code-mixing group on the production test. But there is no significant difference between the effects of codemixing and contextualization (sig. = 0.43). The participants of the code-mixing group performed better than the participants of the contextualization group on the production test, but the difference was not statistically significant. There is also a significant difference between the effects of thematic clustering and contextualization (sig. = 0.001). The participants of the thematic clustering group performed better than the participants of the contextualization group on the production test.

The findings contradict the findings of a number of

**Table 4.** The result of the one-way ANOVA on vocabulary production.

	Sum of squares	df	Mean square	F	Sig.
Between groups	724.21	2	362.10	8.18	0.000
Within groups	5179.57	117	44.27		
Total	5903.79	119			

**Table 5.** Multiple comparisons of the three methods.

(I) Group	(J) Group	Mean difference (I-J)	Std. Error	Sig.
Code-mixing	thematic cluster	-3.97 <sup>*</sup>	1.4	0.031
Code-mixing	contextualization	1.92	1.48	0.436
Thematic cluster	contextualization	5.90 <sup>*</sup>	1.48	0.001

previous studies at the same time that they lend support to the findings of a number of other studies. For instance, Ayenomi (2006), Celik (2003), and Woon (2007) all found code-mixing to be a useful technique in teaching L2 vocabulary. They believe that code-mixing has long lasting effects on both recognition and production of the lexical items. This study, on the other hand, failed to provide sufficient evidence to support such claims. On the contrary, the findings of this study suggest that codemixing is the least effective of the three techniques on vocabulary recognition, and significantly less effective than thematic clustering on vocabulary production. At the same time, it is only slightly, and insignificantly, better than contextualization in vocabulary production. Such results may be partially attributable to the fact that in other studies, code-mixing was usually compared with traditional decontextualized lexical memorization. It might be argued that in such circumstances, the sheer novelty of the technique may be sufficient to arouse a higher level of interest and motivation, and lead to better results. Alternatively, it could also be assumed that code-mixing might indeed be more effective than memorization. In this study, however, code-mixing was compared with two other popular techniques. One logical conclusion to be drawn from this would be that, the effectiveness of each technique can be only relative, depending to a large extent on the other techniques with which it is compared. So, code-mixing might indeed be more effective than memorization, no different from contextualization, and less effective than thematic clustering on both vocabulary recognition and production.

Another possible reason for the poor performance of the code-mixing group might be the mixing of the native and target languages, which is the very nature of code-mixing. It may stand to reason that when the target language is used only in conjunction with the native language; learners continue to draw upon their stronger native language intuitions whenever the target language knowledge is insufficient to meet the demands of receptive or productive language use. This reliance on

native language intuitions could, in turn, lead to the occurrence of negative transfer, thus inhibiting learning. Furthermore, the findings of this study are in line with those of Blachowitcz and Lee (1991), but fail to corroborate those of Thornbury (2003), Wei (2007), Webb (2007), and Zimmerman (1997), all of which suggested that contextualization facilitates vocabulary learning, and that all vocabulary learning should be in context. Contrary to the mentioned studies, this study has provided little evidence suggesting that, context facilitates vocabulary learning. Actually, contextualization turned out to be significantly less effective than thematic clustering on both vocabulary recognition and production, and even slightly worse than code-mixing in vocabulary production. Such findings might be accounted for on the basis of Hunt and Beglar's (1998) assertion that, guessing from context is a complex and difficult strategy to carry out successfully. In other words, teachers provide learners with words in context hoping that the learners can somehow make use of the contextual clues to understand the meaning of new lexicon.

However, there could be a mismatch between what the teacher expects the learners to do, and what the learners actually do. In such cases, the teacher may assume that the learners noticed and made use of the given clues, whereas some learners may fail to make successful use of such clues. Similarly, Bahr and Dansereau (2001) hold that by presenting words in context, certain semantic relationships are made which interfere with  $L_2$  vocabulary learning. The same thing might have happened here.

Another possible reason for the poor performance of the participants of the contextualization group might be attributable to the proficiency level of the participants in this study, which was pre-intermediate. As Blachowitcz and Lee (1991) note, poorer learners know fewer words than more proficient learners. Due to their poor lexical reservoir, they may be unmotivated to do the amount of contextual reading necessary to extend their lexical knowledge. Thematic clustering turned out to be the most effective of the three techniques on both vocabulary

recognition and production. This lends support to Thinkham's (1997) claim that, thematic clusters can be learnt more easily than groups of unassociated words. The better performance of the thematic clustering group in comparison with the other two groups on L<sub>2</sub> vocabulary recognition and production tests may be justifiable in light of Thinkham's explanation that, thematic clusters tap into both cognitive and linguistic processes and result in better word learning; that is, there is some kind of dual coding involved, and learners receive information through two sources. In other words, apart from the linguistic processes, there are certain cognitive processes resulting from the mental maps or connections that further facilitate lexical learning. Therefore, learners may even make visual images of the clusters presented in each topic. This might have enabled them to both recognize and produce words better in comparison to the other two groups.

The findings of the present study may have implications for both language teaching and materials development. In order to teach  $L_2$  vocabulary to language learners, language teachers can apply various sets of thematic clusters to improve learners' ability to recognize and produce words more accurately in context. It may also have implications for syllabus designers. Being knowledgeable about how different ways of vocabulary presentation influence the recognition and production of  $L_2$  vocabulary, enables syllabus designers to make more informed decisions, as to what sort of teaching materials to include in the syllabus.

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