



# Modern Research Studies

Editor-in-Chief  
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**An International  
Journal of  
Humanities and Social  
Sciences**

*An Indexed & Refereed e-Journal*

[www.modernresearch.in](http://www.modernresearch.in)

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**Volume 2, Issue 3  
September 2015**

**pp. 429–452.**

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## **Group-based Construction of Vocabulary Knowledge in the EFL Context: The Case of Problem Solving Tasks**

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**Abstract:** Recent developments in teaching vocabulary have leveled criticisms to the old methods of vocabulary instruction. Moreover, the emergence of new methods to teaching vocabulary has made teachers think and choose the most effective way. This study is an attempt to compare two ways of teaching vocabulary in young language learners' classes. The effectiveness of teaching vocabulary through problem solving group-based tasks and the traditional instruction was examined, and the purpose was to see which one could be more influential in young learners' vocabulary achievement. Two groups of elementary level male and female Iranian EFL learners took part in the study. Participants' were selected non-randomly based on their performance on the Key English Test (KET). In the experimental group (N=30) problem-solving tasks were performed as the treatment for teaching the words, and in the control group (N=30) language was taught without the use of problem-solving tasks. The results of independent samples t-test showed that the problem-solving group outperformed the control group with regard to the vocabulary achievement scores. In addition, results showed insignificant differences between male and female participants in their post-test scores. Future directions and implications for practice are also discussed.

**Keywords:** Task, vocabulary learning, problem-solving, L2 learners, gender

## **1. Introduction**

There has been a shift in recent years to the Developmentally Appropriate Practice (DAP) approach which presents important set of rules and principles for teaching learners in language classrooms. According to its recent guidelines (Copple & Bredekamp 2009), DAP focuses on teachers' establishment of a balance between learner-initiated and teacher-guided opportunities for learners to discover and learn about the language. This approach is consistent with constructivist approach which promotes teachers' provision of materials and opportunities for self-discovery and experimentation of learners without employing explicit and systematic teaching of particular points. Based on Piaget's work, constructivist teachers support and enhance learners' language learning by motivating self-direction in learners and organizing cognitive contradictions without explicitly providing information (Chaille & Britain 1991; Forman & Kushner 1983). Put another way, teachers attempt to use this approach when they pursue a learner's lead and promote the learner's exploration by employing strategies such as modeling, describing what learners are performing, and presenting information in a way that challenges learners' cogitation and reasoning. This approach, therefore, motivates the application of group-works enhancing the problem-solving skills of learners.

There have been studies examining the process of vocabulary learning in a task-based instructional context informed by the principles of group-work (Centeno-Cortés & Jiménez Jiménez 2004; K.P. Chen 2005; Huong 2006; Kim 2008; Thomas 2010; Hong & Diamond 2012; Niu & Helmes-Park 2013; Dobao 2014; Shintani & Ellis 2014). The majority of studies investigating the role of group work in vocabulary learning from an interactionist perspective have brought about positive results. On the whole, this line of research indicates that the interaction either among the learners in pair or groups (e.g., Adams 2007; Newton 1993) or between the learner and teacher (e.g., De la Fuente 2002; Ellis & He 1999; Ellis, Tanaka & Yamazaki 1994; Gass & Torres 2005) can lead to satisfyingly high vocabulary scores and therefore vocabulary learning. Centeno-Cortés and Jiménez Jiménez (2004) investigated the learners' private verbal thinking during problem solving tasks and aimed to understand the role of first and second language in this

process. Private verbal thinking was considered as a specific type of private speech that is used in the reasoning of the problem solving tasks. The study compared the private speech of three different groups of learners during problem solving tasks; intermediate learners of Spanish, advanced learners of Spanish, and native speakers of Spanish. In addition to investigating the general specificities of this process, a focus was also on the participants' use of their first language during the resolution of a number of logically-oriented tasks. Centeno-Cortés and Jiménez Jiménez (2004) found that the first language had an undeniable role on problem-solving achievement. More specifically, results showed that:

In solving L2 tasks designed for this study, native speakers of Spanish used Private Verbal Thinking (PVT) only in Spanish, while native speakers of English employed both their L1 and L2. However, we have found that the use of PVT in the L2 differs according to proficiency levels. Intermediate learners employed the L2 mainly while reading and for repetitions of parts of the questions, fixed expressions, metacomments, etc., while advanced L2 speakers extended its use to the actual thinking process (during the reasoning stage). (31)

The authors attributed this finding to the fact that the higher language proficiency equips the learners with sufficient cognitive strategies that they can apply in the solving of L2 tasks.

In line with the above studies, K.P. Chen (2005) conducted a study in which he examined the relative effects of the use of group-based tasks and the traditional teacher-fronted techniques. As with the other studies, the experimental group received tasks emphasizing the key components of cooperative learning and the control group received teacher-fronted instruction. Results showed significant effects for the task-based intervention compared with the teacher-fronted instruction. Chen attributed this to the interactional patterns that were encouraged in the experimental group.

Kim (2008) compared the effect of group and individual work on the learning of 15 vocabulary items used in a dictogloss task. 32 Korean L2 learners were involved in the task, with half of them engaged in collaborative work and the other half in personal while thinking aloud. Participants in the group work were found to achieve significantly higher vocabulary scores compared with the learners engaged in individual work.

C. Chen (2010) investigated the role of cooperative teaching method using tasks in the vocabulary strategy use of learners. The main objective of the research was to observe the students' improvement on word recognition, strategy preference, interaction in groups and perceptions of integrating cooperative method into vocabulary learning strategy instruction. Participants of the study included 60 low achievers at the elementary school. Results of the treatment were fruitful in the sense that there were improvements in the vocabulary recognition and strategy preference of participants. In sum, they could achieve the five elements of cooperative learning (positive interdependence, face-to-face interaction, individual accountability, social skills and group processing).

Thomas (2010) explored the attitudes and perspectives of Japanese EFL learners towards task-based language teaching approach using collaborative problem solving tasks in virtual environment. An ethnographic approach was adopted to study the behavior of 24 learners who were observed and also interviewed. A number of collaborative problem solving tasks related with the development of a research based task were used in the study. The results of this study pinpointed the useful nature of online environment which presents authentic language acquisition within a task-based framework. Although learners could overcome the challenges to participation and became active and encouraged in their learning, several difficulties were also provided by the study. First, learners were more inclined towards text chatting with both English and Japanese languages more than the use of spoken discourse in English. Secondly, learners were more dependent on the first language for interaction during the collaborative stages of task performance.

However, the studies investigating the advantages associated with interactive versus non-interactive vocabulary learning have also produced some mixed findings (e.g., Foster & Ohta 2005; Lo 2010; Nassaji & Tian 2010; Gagné & Parks 2013). Nassaji and Tian (2010), for example, compared the ESL learners' acquisition of target phrasal verbs in collaborative as opposed to individual work. Two output tasks of reconstruction cloze and reconstruction editing were used. The results showed that the collaborative completion of tasks did not cause higher vocabulary achievement compared to individual tasks. In another study with children in the elementary grades, Gagné & Parks (2013) reported that children could rarely use the negotiation strategies from an interactionist perspective. In other words, children were incapable of engaging in linguistically oriented interactions.

The majority of studies (except Hong & Diamond 2012) have explored classroom-oriented peer interaction with adult learners and research with young language learners at elementary levels is scant. The present study is therefore an attempt to compare the Iranian young language learners' vocabulary learning through problem solving tasks as opposed to individualistic work.

## **2. Review of the Related Literature**

### ***2.1. Problem-solving approach***

One of the effective ways of teaching vocabularies to students that has caught considerable attention is the use of problem-solving activities. Previously, Larsen-Freeman (1986) suggested that teaching is an exercise in problem solving tasks. According to this model teaching involves the ongoing solution of series of problems.

There are advantages and disadvantages associated with the use of problem-solving activities in the classroom. For instance, problem solving activities facilitate transfer, retention and increase motivation. Problem solution is achieved when something is also learned. Problem solving is an art which is involved in creating the context in which learning occurs.

According to Ausubel (1963), problem solving as a method of learning requires the learner to discover the higher order principles without specific verbal help. Problem solving or discovery learning involves the combining of the previously learned principles into the new ones that solves the problem and generalizes to an entire class of stimulus situations embodying other problems of the same type. The most important and most obvious characteristic of a discovery approach to teaching is that it requires less teacher involvement and direction than most of the other methods. This issue has a specific significance with regard to the learning of young learners. This approach encourages an inductive method through which young learners can discover the language and learn it. This is in line with the young learners' subconscious and inductive learning abilities and seems to offer a major advantage in teaching for young learners. As Corno and Show (1986), as cited in Lefrancois (1991) point out, teachers can offer a continuum of guidance by adapting their teaching to different students and different purposes.

Problem solving task is the task for learning by intellectual guess. Learning is the formation of careful habit of thinking. In education, the main focus should be upon the fact that learners should be asked to think; in other words, they should be taught to solve problems (Kundu & Tuttoo 1988). According to Kundu and Tuttoo (1988), reflective thought may be analyzed in five phases. At two extremes, there is pre-reflective or beginning situation which is a state of confusion and post reflective situation which is a feeling of mastery over the doubts. There are suggestions among these states of thought such as possible solutions, and intellectualization of the difficulty of a problem to be solved, the use of one suggestion after another as a main idea, reasoning in the sense of developing the assumptions, and testing the hypothesis by overt task.

Kundu and Tutto (1988) stated that learners should get familiar with these five steps in complete thought. Step one describes for the learners the terminal performance which leads to the solution of problem. Step two deals with analyzing the problem to find out what prerequisite concepts are for its solution and to assess the learners' behavior for the concepts they will need to solve the problem. Step three describes the

guidance the teacher must provide to give relevant principles, and step four requires that teachers provide guidance to the problem. Step five requires teachers assess the performance of the learners to see whether they can transfer their learning to new and similar problems. These five steps are overlapping and it is not necessary to be followed one after another.

Therefore, problem-based learning purposefully combines cognitive and metacognitive teaching and learning. It is an approach that has been around since the late 1960s (Neufeld & Barrows 1974) and engages EFL learners in learning how to learn language and content. When the participants of the first language have problems, they can skillfully manage them, but second language speakers spare a lot of effort to overcome this difficulty, and negotiate the meaning. Understanding second language problem management is important; however, in spite of the prominence of problem-solving behavior in learner's speech, current language teaching books do not provide learners with outline tasks as comprehensive frameworks of problem. Problem solving learning can situate language learning in the real world. By posing language learners problems like those found in real life, teachers can bring the gap between language use in the real world and the one in the classroom. The problems used in problem-based learning are ill-structured; that is, they do not have clear-cut or absolute answer, welcoming more reasoning and cogitation on the part of learners. In addition, they require learners to explore resources other than the teacher, including reference materials and community members, and draw on knowledge from various subject areas such as mathematics, geography, and science (Duffy & Savery 1994).

In line with different research studies done in this area and in order to compare the efficiency of the use of group-based problem-solving approach in the teaching of vocabulary items to young language learners, the following research questions were proposed:

1. Do group-based problem solving tasks impact Iranian EFL learners' vocabulary achievement?



2. Is there any significant difference between male and female EFL learners' vocabulary achievement using group-based problem solving tasks?

### **3. Method**

#### **3.1. Participants**

Participants of this study consisted of 60 Iranian male (N = 28) and female (N = 32) learners at Jahad Daneshgahi Language Institute, Urmia, Iran. Their age ranged from 9 to 12. The participants were tested for homogeneity in terms of their language proficiency to consist of only elementary learners at A2 level identified in Common European Framework of Reference. The proficiency test of Key English Test (KET) was employed for homogeneity purposes. From among 66 students, 60 who scored one standard deviation above and below the mean of the KET for young EFL learners were chosen as the target sample of the study and were assigned into two groups of experimental (N=30) and control (N=30). Participants were young language learners who were studying English as a foreign language. Two intact classes served as the experimental and control groups. In both classes the Top Notch 1 book (Saslow & Ascher 2011) was used which introduced all the competencies of A1 Level described in the Common European Framework of Reference, and introduced competencies at the A2 level. The difference between these groups was the type of teaching, that is, in the experimental group learners were engaged in problem solving tasks of cross word puzzle, unscrambled word flash cards, unscramble letters, and guess and link, whereas the control group participants did not receive any task-based instruction. Vocabulary post-test was administered to identify any treatment effects.

#### **3.2. Instrumentations**

Three main instruments were used in this study to evaluate learners' vocabulary achievement with regard to the use of problem-solving tasks.

### **3.2.1. Key English Test**

The Key English Test (KET 2014) which is a standardized test developed by Cambridge University was administered to the participants in order to determine their level of proficiency and ensure that they were of near homogeneity. KET includes ‘reading and writing’, ‘listening’ and ‘speaking’ sections. Only the reading section was used since the purpose of the present study was to evaluate learners’ level of vocabulary knowledge.

The test contained 5 reading parts and 31 questions. For the first part of reading, eight signs, notices or short texts with a total of five matching type sentences were included and learners were asked to match each sentence to the right sign or notice. Each correct answer got one mark. Five quite short texts with five multiple choice questions were used in part two. The learners were required to read the texts and select one of the three words (A, B, or C) as the best description of the text. The third part was of a multiple-choice format which included 10 questions. The first 5 questions were about the themes that people say in a conversation and for each sentence, learners were asked to select what the partner would say next (A, B, or C). The second section of part 3 was a comparatively longer conversation with some sentences missing. There were a list of sentences (A-H) and the learners were supposed to discover the correct sentence for each space. In this part too, each correct answer carried one mark. The fourth part consisted of multiple-choice questions or right/wrong/doesn’t say. Here, there was a long text where the learners needed to read the text with seven sentences and decide if each sentence was right, wrong or doesn’t say or choose the correct answer (A, B, or C) to the questions. And, the last part, i.e., part five, was a short text with 8 numbered spaces. The learners were required to read the text and understand the essential vocabulary and choose the correct answer from a choice of three (A, B, or C). This part has a multiple-choice cloze format.

### **3.2.2. Vocabulary Post-test**

The vocabulary test as a post-test was administered at the 20<sup>th</sup> session (the last instructional session) in order to determine how much knowledge was gained by the elementary participants after the

treatment. This test included 30 teacher-made items, and the items were chosen from the 45 newly learned vocabularies. The test consisted of three parts: 16 items of unscrambled letters, (learners ordered the letters to make a meaningful word by the help of a picture related to the item). The second part was a cloze test containing 6 new vocabulary items. The last part was 8 true or false items. The learners were asked to answer the questions in 40 minutes. The test was first piloted on a sample group of 30 students with nearly the same characteristics of the experimental groups to estimate its reliability (0.88) and carry out item analyses. This test aimed to identify how many words the participants could remember shortly after the treatment.

### **3.3.3. Course Book**

The book entitled Top Notch 1 (Saslow & Ascher, 2011) was taught at this level according to the syllabus of the language institute. Each unit of the book works on vocabulary, grammar, speaking, reading, and listening activities. The book has an audio CD for listening parts as well as the activity book and a work sheet. Since this book puts heavy emphasis on the learning of new vocabulary items by young learners and because the book is successful in providing the vocabularies in very attractive ways to children, it has been considered as an appropriate course book to be used in the present study. Three units of ‘Names and Occupations’, ‘Relationships’, and ‘Directions and Transportation’ from pages 4 to 20 were taught. It should also be mentioned that there has been no other additional sources used alongside this book.

## **3.4. Procedure**

### **3.4.1. Pilot Study**

In order to calculate the reliability of the post-test which was developed by the teacher to evaluate learners’ vocabulary gains, a pilot study was run before the main study. The test was administered to a group of 30 students of elementary young EFL learners at Jahad Daneshgahi Language Institute with nearly the same characteristics as the target sample. The results were analyzed by conducting the statistical procedures.

### 3.4.2. Main Study

Prior to the conduction of the study, KET was administered to learners to homogenize them in terms of their language proficiency. Only the reading section of the test was administered since the purpose of the study was to evaluate the vocabulary knowledge of learners. The reading questions included 35 items. And, since KET is a standardized test which has passed through stages of tests validation and can be used in different contexts, its psychometric properties were not estimated in the present study. Learners' vocabulary knowledge was evaluated in the reading section since the ability to complete the reading tasks requires the knowledge of the words used in the text. Thus, as a result of using the KET, only A2 level (or elementary) learners were included in the study. Two classes were used as participants of the study. In the experimental group, the participants were exposed to group-based problem solving tasks, whereas in the control group a more traditional method of teaching was employed. The problem solving tasks included cross word puzzle, unscrambled word flash cards, unscramble letters (word jumble), and guess and link. In the first 5 sessions the teacher gave some cards of crossword puzzle. In each card there were some definitions or an image of the newly learned vocabulary item. Learners needed to interact to solve the crossword puzzle and hand it to the teacher. The group with no or less mistakes was the one considered to have a higher performance on the task. In the following 5 sessions, the teacher gave some cards with scrambled letters to the groups. They should have interacted to order the letters and write the correct word on the card. Then, the teacher checked the correctness and after that the group with no or less mistake was the winner. The following 5 sessions were unscrambling words. In this task students had the opportunity to use the word in context such that they unscrambled the random letters to make real words that appear in dictionary. In the following 5 sessions, guess and link tasks were used. Again in groups, the teacher gave some cards to the students; on every card there was a sentence with a blank. Under the sentence, there were 3 scrambled letters. The learners should have unscrambled the letters first, then interact to choose the best option.

In contrast to the experimental group participants, the control group students received traditional teacher-fronted instruction throughout the classroom time. In this class, the teacher taught the vocabulary items in the reading text by giving explanation. After transmitting the required knowledge, the teacher asked some of the students to answer the exercises individually. She taught the new vocabulary items using target language and where necessary native language descriptions were used. Students were able to ask questions about the unclear points. Classroom interaction was mostly teacher-initiated, with the teacher starting the conversation and the learner-learner interaction was limited. It should be mentioned that the same teacher taught the experimental and control groups.

After the 20 sessions of the above mentioned practices, a teacher-made vocabulary post-test based on the vocabularies practiced in the classroom was administered to the participants to evaluate their possible improvement. This test included 30 teacher-made items, and the items were chosen from the newly learned vocabularies. The test consisted of three parts: unscrambled letters, (learners order the letters to make a meaningful word by the help of a picture related to the item, cloze test containing new vocabulary items, true or false items. The learners were asked to answer the questions in 40 minutes. It should be mentioned that before administering the post-test, it was first piloted with a group of nearly the same characteristics as the target sample in order to estimate its reliability.

#### 4. Results

The data were then analyzed using the Statistical Package for the Social Sciences (SPSS) version 21. First, the data were analyzed to ensure the assumptions of normality. The result of Kolmogorov-Smirnov test is presented below.

Table 1. *Kolmogorov-Smirnov Test Result*

Null hypothesis	Test	Sig.	Decision
The distribution of post-test is normal with mean 23.16 and standard deviation 4.67.	One-Sample Kolmogorov Smirnov Test	.23	Retain the null hypothesis.

The result of Kolmogorov-Smirnov tests show that the scores in all the variables are normally distributed ( $p > 0.05$ ).

#### **4.1. Psychometric properties**

The instrument that was used in this study was the post-test developed by the teacher consisting of 30 items. Prior to the conduction of study, a pilot study was carried out with 30 learners to investigate the reliability and validity of the instrument. The reliability of the post-test was computed using the Cronbach’s Alpha. The Cronbach’s Alpha coefficient value for the reliability analysis of the test was found to be .88 which shows a satisfying level of reliability.

*Table 2. Reliability Statistics of Post-test*

Cronbach's Alpha	N of Items
.88	30

To explore the factor structure of the test items, an exploratory factor analysis was performed using a principal components analysis. After the varimax rotation, a six-factor solution was chosen for the post-test which accounted for 90.17% of the total variance. All of the items met the criterion of loading at least 0.4 on their respective factor. The result of the factor analysis is displayed in table 3.

*Table 3. Factor Analysis of Post-test*

	Component					
	1	2	3	4	5	6
v1	.97					
v2	.97					
v3	.93					
v4				.95		
v5	.93					
v6	.89					
v7				-.46	-	
					.71	
v8	.85					
v9	.87					

v10	.86		
v11		.43	.46
v12	.64	-.44	.52
v13	.90		
v14			-.79
v15		.81	
v16		.96	
v17		.66	
v18		.95	
v19		.55	.66
v20		.86	
v21		.89	
v22		.64	.56
v23			.82
v24			.78
v25			.83
v26	-.44	-.54	
v27	.97		
v28	.97		
v29	.93		
v30			.95

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 7 iterations.

In order to test the first null hypothesis of the study, the analysis of covariance (ANCOVA) was run. The major assumption of ANCOVA is the homogeneity of variances; therefore, Levene's test was applied. Table 4 manifests the result of the homogeneity of variances.

Table 4. *Levene's Test of Equality of Error Variances*

F	df1	df2	Sig.
4.10	11	112.95	.04

The homogeneity of variance assumption ( $F=4.10$ ,  $p=.04$ ,  $p < \alpha$ ) was violated in which the  $p$  value for Levene's test ( $p=0.04$ ) was less than

0.05. As a result, an independent samples *t*-test was employed to compare the differences of the control and experimental groups in terms of their vocabulary achievement.

Table 5. Descriptive Statistics Results for Experimental and Control Group Vocabulary Performance

	groups	N	Mean	Std. Deviation	Std. Error Mean
posttest	control	30	20.96	4.23	.77
	experimental	30	27.36	2.69	.49

Table 6. T-test Results for Experimental and Control Group Vocabulary Performance

		Levene's Test for Equality of Variances		t-test for Equality of Means						
	Post-test	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
	Equal variances assumed	4.22	.04	-6.97	58	.00	-6.40	.91	-8.23	-4.56
	Equal variances not assumed			-6.97	49.17	.00	-6.40	.91	-8.24	-4.55

The results show that the significance level of Levene's test is  $p=0.04$ , which means that the variances for the two groups (control and experimental) are not the same. The results of independent samples *t*-test show statistically significant differences ( $t(49.17) = -6.97, p < 0.05$ ) between the control and experimental learners in terms of their vocabulary performance. These results are in line with those of descriptive statistics, showing that the experimental learners ( $M = 27.36, SD = 2.69$ ) outperformed the control learners ( $M = 20.96, SD = 4.23$ ) in their vocabulary attainment. Therefore, the first null hypothesis is rejected.



In an attempt to identify the differences between the male and female experimental learners in their vocabulary achievement, an independent samples *t*-test was carried out. The results are shown in tables 7 and 8.

Table 7. Descriptive Statistics Results for Vocabulary Performance across Gender

	gender	N	Mean	Std. Deviation	Std. Error Mean
experimental	male	28	25.50	3.78	.71
	female	32	24.84	3.78	.66

Table 8. T-test Results for Vocabulary Performance across Gender

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
experimental	Equal variances assumed	.04	.82	.67	58	.50	.65	.97	-1.30	2.61
	Equal variances not assumed			.67	56.94	.50	.65	.97	-1.30	2.61

The results show that the significance level of Levene's test is  $p=0.82$ , which means that the variances for the two groups (male and female) are the same. The results of independent samples *t*-test show statistically insignificant differences ( $t(58) = 0.67, p > 0.05$ ) between the male and female experimental learners in terms of their vocabulary performance. These results are in line with those of descriptive statistics, showing that both the male ( $M=25.50, SD=3.78$ ) and female learners ( $M=24.84, SD=3.78$ ) were equal in their vocabulary attainment. Therefore, the second null hypothesis is retained.

## **5. Discussion**

The findings of the present study show that the experimental group outperformed the control group in vocabulary achievement leading to the rejection of the related null hypothesis of the study. In fact, the results of the present study are logical and acceptable given the fact that the participants of the study were at the elementary level of proficiency and therefore were more at ease with the use of concrete tasks that required group work with peers. In other words, the elementary level learners can have extreme difficulties in receiving and retaining the language through the use of an entirely teacher-fronted instruction than the use of more concrete and tangible activities. Problem-solving approach provides a sort of task-based approach in which learners cooperate and work together to achieve the end result. They use the language subconsciously as a means towards the end. In addition, they need to explicitly think about the process to reach the product of the activity. This cogitation can activate their critical thinking abilities if the approach can be taught efficiently with the use of tangible tasks.

The findings of the present study are in line with those of previous investigations (Centeno-Cortés & Jiménez Jiménez 2004; K.P. Chen 2005; Huong 2006; Kim 2008; Thomas 2010; Hong & Diamond 2012; Niu & Helmes-Park 2013; Dobao 2014; Shintani & Ellis 2014). For example, Whither (1984) states that word play and verbal humor provide excellent opportunities for teaching inferencing as students interpret or intelligently guess at the author's meaning. Also, Warnock (1989) holds that the appropriate use of word game is a powerful activity which can help adult educators to positively affect people's knowledge, attitudes, skills, and aspirations and the didactic process. Besides, Uberman (1998), for example, observed the enthusiasm of her students in learning through tasks. She considers word tasks a way to help students not only enjoy and entertain with the language they learn, but also practice it incidentally.

The results of the present study are also in line with those of Luan and Sappathy (2011), Shintani (2011) and Negari and Rouhi (2012). In total, the results of these studies showed that the vocabulary instruction

through the encouragement of negotiation for meaning using different tasks can facilitate vocabulary learning.

However, the results of above-mentioned studies are in conflict with those of Nassaji and Tian (2010) who did not find benefits of collaborative tasks over individual work in vocabulary learning. In their study, 26 second language learners were asked to perform two cloze tasks and two editing tasks on the employment of phrasal verbs. All the learners in this study could successfully enhance their knowledge of phrasal verbs as tested by both pre- and post-tests. Nassaji and Tian ascribed the results to the complexity of phrasal verbs and the learners' lack of collaborative skills.

The results of the second research question showed no difference between male and female learners with regard to the vocabulary achievement. This finding is consistent with the results of other previous studies (Wang 2007); sex-related personality factors have a limited influence upon the problem-solving ability. However, the finding of the present study is in contrast with those of the previous research in favor of women's broader vocabulary and greater fluency (Kolb & Whishaw 2001; Sommer et al. 2004; Mildner 2008; Pinker 2007) and a higher and better performance in vocabulary learning tasks (Kramer, Delis & Daniel 1988).

Some developmental psychologists have argued that young learners cannot manage problem-solving tasks due to their limited ability (e.g., Brown, Campione, Metz, & Ash 1997). In contrast to this argument, the findings of the present study show that young learners at the elementary level can learn vocabulary and age-appropriate problem solving strategies when effective help and teaching are presented to them. According to Developmentally Appropriate Practices (Copple & Bredekamp 2009), teachers teaching young learners might not only present materials and opportunities based on which learners can discover the language, but also provide explicit instruction to assist learners in order to better comprehend the issues (Mantzicopoulos, Samarapungavan, & Patrick 2009).

The group-work problem-solving strategy encourages students to become engaged in their learning. It motivates students to learn a lot of materials quickly and inspires them to share information with peers. The technique minimizes listening time, and makes students responsible for their own learning. Given that each group needs its members to perform well in order for the whole group to succeed, this technique maximizes interaction and establishes an atmosphere of cooperation and respect amongst students. Taking these into consideration, teachers need to let the students think through and discover the effective ways of teaching the portion of the task content to the peers. Then, an important task of the teacher in a language classroom is to prepare the students well for the peer interaction in problem solving task performance. For instance, teachers can formalize the preparation so that they avoid assigning a vague task. Teachers should encourage a warm classroom environment in which students feel more comfortable speaking up in the small groups found in the cooperative task-based classrooms. Requiring students to prepare something in writing, even if the team preparation happens in class, can be very helpful both for the students and for the teacher. A second matter is that teachers should ascertain that the students are actually prepared. When the teacher encourages the writing of something during the preparation time, she can move around and read what they have written while working. Or the teacher can ask each group to summarize their thoughts so as to make sure that they will not deviate from the main issue. A last responsibility for the teacher with regard to the students' teaching part is that she can guide the students how to prepare for peer interaction.

Teachers need to be aware of the fact that the group based work is especially useful in any class size at any student level. The groups, large or small, should consist of heterogeneous students so that they learn from each other's experiences.

## References:

- Adams, R. 2007. "Do second language learners benefit from interacting with each other?" In *Conversational interaction in second language acquisition*. Edited by A. Mackey, 29-51. Oxford: Oxford University Press.
- Ausubel, D. 1963. *The psychology of meaningful verbal learning*. New York: Grune & Stratton.
- Brown, A.L., J.C. Campione, K.E. Metz, & D.B. Ash. 1997. "The development of science learning abilities in children." In *Growing up with science: Developing early understanding of science*, edited by K. Harnqvist & A. Burgen, 7–40. Bristol, PA: Jessica Kingsley, Academia Europaea.
- Centeno-Cortés, B., & Antonia F. Jiménez Jiménez. 2004. "Problem-solving tasks in a foreign language: The importance of the L1 in private verbal thinking." *International Journal of Applied Linguistics*, 14: 7-35.
- Chaille, C., & L. Britain. 1991. *The young child as scientist: A constructivist approach to early childhood science education*. New York: HarperCollins.
- Chen, C. 2010. *A study on integrating cooperative learning into vocabulary learning strategy instruction to increase word recognition of elementary school low achievers*. Unpublished thesis, National Taiwan University of Science and Technology.
- Chen, K. P. 2005. *The Effects of Cooperative Learning on Vocational High School Students' English Reading*. Unpublished Master's Thesis, National Pingtung Institute of Commerce.
- Copple, C., & S. Bredekamp. 2009. *Developmentally appropriate practice in early childhood programs serving children from birth through age 8* (3rd ed.). Washington, DC: National Association for the Education of Young Children.

- De la Fuente, M.J. 2002. "Negotiation and oral acquisition of L2 vocabulary: The roles of input and output in receptive and productive acquisition of words." *Studies in Second Language Acquisition*, 24: 81–112.
- Dobao, A.F. 2014. "Vocabulary learning in collaborative tasks: A comparison of pair and small group work." *Language Teaching Research*, 18(4): 497-520.
- Duffy, T.M., & J.R. Savery. 1994. "Problem-based learning: An instructional model and constructivist framework." In *Constructivist learning environments: Case studies in instructional design*. Edited by Brent G. Wilson, 183-512. Englewood Cliffs, NJ: Educational Technology Publications.
- Ellis, Rod, & Xien He. 1999. "The roles of modified input and output in the incidental acquisition of word meanings." *Studies in Second Language Acquisition*, 21: 285–301.
- Ellis, Rod, Yoshihiro Tanaka, & Asako Yamazaki. 1994. "Classroom interaction, comprehension, and L2 vocabulary acquisition." *Language Learning*, 44: 449–491.
- Forman, G.E., & D.S. Kuschner. 1983. *The child's construction of knowledge: Piaget for teaching children*. Washington, DC: National Association for the Education of Young Children.
- Foster, P., & A. Ohta. 2005. "Negotiation for meaning and peer assistance in classroom language tasks." *Applied Linguistics*, 26: 402-430.
- Gagné, N., & S. Parks. 2013. "Cooperative learning tasks in a grade 6 intensive ESL class: Role of scaffolding." *Language Teaching Research*, 17: 188-209.
- Gass, S., & M.J.A. Torres. 2005. "Attention when? An investigation of the ordering effect of input and interaction." *Studies in Second Language Acquisition*, 27: 1–31.

- Hong, S.Y., K.E. Diamond. 2012. “Two approaches to teaching young children science concepts, vocabulary, and scientific problem-solving skills.” *Early Childhood Research Quarterly*, 27: 295-305.
- Huong, Le Pham Hoai. 2006. “Learning vocabulary in group work in Vietnam.” *RELC Journal*, 37: 105-121.
- Kim, You Jin. 2008. “The role of task-induced involvement and learner proficiency in L2 vocabulary acquisition.” *Language Learning*, 58: 285–325.
- Kolb, Bryan, & Ian Q. Whishaw. 2001. *An introduction to brain and behavior*. New York: Worth Publishers.
- Kundu, C.L., & D.N. Tutoo. 1988. *Educational psychology*. New Delhi: Sterling Publishers
- Larsen-Freeman, D. 1986. *Techniques and principles in language teaching*. Oxford: Oxford University Press.
- Lefrancois, Guy R. 1991. *Psychology for teaching*. Washington, D.C.: Wordsworth.
- Lo, Ya-Fen. 2010. “Implementing reflective portfolios for promoting autonomous learning among EFL College students in Taiwan.” *Language Teaching Research*, 14(1): 77-95.
- Luan, N.L., & S.M. Sappathy. 2011. “L2 vocabulary acquisition: the impact of negotiated interaction.” *Journal of Language Studies*, 11: 5-20.
- Mantzicopoulos, P., A. Samarapungavan, & H. Patrick. 2009. “We learn how to predict and be a scientist: Early science experiences and kindergarten children’s social meaning about science.” *Cognition and Instruction*, 27: 312–369.
- Mildner, V. 2008. *The cognitive neuroscience of human communication*. New York: Lawrence Erlbaum Associates.

- Nassaji, Hossein, & Jun Tian. 2010. "Collaborative and individual output tasks and their effects on learning English phrasal verbs." *Language Teaching Research*, 14: 397-419.
- Negari, Giti Mousapour, & Mahdieh Rouhi. 2012. "Effects of lexical modification on incidental vocabulary acquisition of Iranian EFL students." *English Language Teaching*, 5: 95-104.
- Neufeld, V.R., H.S. Barrows. 1974. "An approach to medical education." *Journal of Medical Education*, 49: 1040-1050.
- Newton, J. 1993. *Task-based interaction among adult learners of English and its role in second language development*. Unpublished PhD dissertation, Victoria University of Wellington, New Zealand.
- Niu, Ruiying, & Rena Helmes-Park. 2014. "Interaction, modality, and word engagement as factors in lexical learning in a Chinese context." *Language Teaching Research*, 18: 345-372.
- Pinker, Steven. 2007. *The Stuff of Thought*. London: Allen Lane.
- Saslow, Joan, & Allen Ascher. 2011. *Top Notch 1 with Active Book*. New York: Pearson Education ESL.
- Shintani, N. 2011. "A comparative study of the effects of input-based and production-based instruction on vocabulary acquisition by young EFL learners." *Language Teaching Research*, 15: 137-158.
- Shintani, N., & R. Ellis. 2014. "Tracking 'learning behaviors' in the incidental acquisition of two dimensional adjectives by Japanese beginner learners of L2 English." *Language Teaching Research*, 18: 521-542.
- Sommer, I. E., A. Aleman, M. Somers, M.P. Boks, & R.S. Kahn. 2008. "Sex differences in handedness, asymmetry of the Planum Temporale and functional language lateralization." *Brain Research*, 12: 76–88.



- Thomas, M. 2010. "Task-based language teaching and collaborative problem-solving with Second Life: A case study of Japanese EFL learners." Paper presented at the International Conference on ICT for Language Learning. University of Central Lancashire, United Kingdom, November 11-12, 2010.
- Uberman, A. 1998. "The use of games for vocabulary presentation and revision." *Forum*, 36: 20-27.
- Wang, Xiaolei. 2007. "A model of the relationship of sex-role orientation to social problem-solving." *Sex Roles*, 57(5): 397-408.
- Warnock, Peter. 1989. *Humor as a Didactic Tool in Adult Education*. Oxford: Oxford University Press.