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Visually-mediated Instruction of Lexical Collocations: The Role of Involvement Load and Task Orientation

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Abstract

The present study aimed to probe the impact of visual scaffolding using input and output-oriented tasks with different levels of involvement load on Iranian EFL learners' comprehension and production of lexical collocations. For this purpose, 180 male and female intermediate EFL learners were selected and assigned to six experimental groups. Three input-oriented tasks of True-false (load = 1), Matching (load = 2), Multiple-choice (load = 3), and three output-oriented tasks of Short-response (load = 1), Fill-in-the-blanks (load = 2), Sentence formation (load = 3) were developed. All the experimental groups were scaffolded through visual cues. At the end of treatment period, two posttests- a 40-item multiple-choice test and 40-item Fill-in-the-blanks test- were administered to assess the participants' comprehension and production of lexical collocations. To analyze the data, two separate one-way MANOVA procedures were used. The results revealed that visual cues were effective on learners' collocational achievement. The results also indicated that the output-oriented tasks had a significant positive effect on the comprehension and production of lexical collocations. In addition, tasks with higher involvement load indices were more effective on the comprehension and production of lexical collocations. These finding can have significant pedagogical as well as theoretical implications.

Keywords: Involvement load, lexical collocations, visual cues

Introduction[#]

It is well acknowledged that words are the main component of any language. The default argument in second language leaning literature is that lexical competence constitutes the very heart of communicative competence (Laufer, 2003). As a matter of fact, lack of vocabulary knowledge hinders L2 learners to understand and express themselves unambiguously (Nation 2001). The issue is even more abstruse when it comes to lexical combinations learning. Word combinations like collocations, as Shin and Nation (2008) state, aid learners to develop native-like fluency of language. Collocations are generally classified into lexical and grammatical collocations (Mahmoud, 2005). Grammatical collocations include content words such as a noun, an adjective, an adverb or a verb along with a preposition or infinitive, whereas lexical collocations comprise only content words.

In spite of the undeniable significance of collocations in language development, most language teachers do not know how best to assist their students. Wong and VanPatten (2003) argue that L2 learners' development of underlying linguistic system is mainly dependent on the amount of exposure to language input. From this perspective, some scholars (e.g. Krashen, 1982; Krashen & Terrell, 1983) contend that the tasks which are slightly more difficult than what students can manage independently can accelerate students' cognitive development. While Krashen emphasizes only comprehensible input in second (or foreign) language learning, others (DeKeyser, 2007; Swain, 1985) declare that learners need to be equipped with both comprehensible input and comprehensible output to foster their learning and overcome communicative difficulties. While introducing the new concept of Involvement Load Hypothesis, Laufer and

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Hulstijn (2001) brought into light that words learning depends, to a great extent, on the amount of involvement or mental attempt that a task imposes. They defined involvement as a cognitive-motivational construct based on which learners' progress in the learning of unknown lexical items can be described and predicted. Involvement is operationalized by the tasks developed to differ in the degree of need, search and evaluation. Hustijn and Laufer (2001) compared the involvement index of tasks with each other numerically on the basis of the absence or presence of each of the three elements (i.e. need, search and evaluation); mark 0 is given to the absence of a factor, 1 point is given to a moderate presence of a factor, and 2 points are awarded for a strong presence of a factor. Therefore, the involvement index of a task can range from 0 (lowest index) to 5 (highest index) (Sarani, Mousapour Negari & Ghaviniat, 2013).

In the light of Involvement Load Hypothesis, many studies have considered the effect of different types of task with different or identical levels of involvement loads (Baleghizadeh & Abbasi, 2013; Chaharlang & Farvardin, 2018; Nassaji & Hu, 2012). On the other hand, of the limited studies that have dealt with collocations instruction, some are concerned with exploring the impact of task types on collocations instruction: productive tasks (Malenica & Mustapić, 2015), form-focused and collaborative tasks (Fanaee, 2014), collaborative and individual tasks (Minaei & Rezaie, 2014), form versus meaning-focused tasks (Pishghadam, Khodadady & Daliry Rad, 2011), decision-making tasks and production tasks (Zare Behtash & Etehadi , 2016), receptive and productive tasks (Ertürk, 2017; Falahi & Falhasiri, 2012; Falahi & Moinzadeh, 2012), input- and output-based tasks (Gholami & Farvardin, 2017; Kaivanpanah, Alavi & Ravandpour, 2020; Khonamri & Hamzenia, 2013). It can be seen that each of these studies has been almost limited to one kind of task and/or compares two types of task to examine their effect on teaching or learning collocations. As a result, the findings of such studies cannot be generalized beyond their proper limit. Therefore, it becomes a matter of necessity to investigate and compare the effect of a wider range of tasks in collocations instruction within a single research.

On the other hand, according to Field (2004), learners should be encouraged to notice a task to achieve the learning goals. This can occur if they are provided with clear, efficient guidance. Thus, a language learner who is suitably scaffolded becomes able to develop his own skill and motivation (Lawson, 2002), and gradually take responsibility for the learning event.

The concept of scaffolding is based on the notion that learning takes place in meaningful contexts and in social interactions rather than in isolation (Vygotsky, 1978). Scaffolding and the Zone of Proximal Development (ZPD), one of the key notions of Vygotsky's sociocultural theory, are inextricably interwoven. The ZPD construct is made on the basis of the distance between the L2 learner's independent language use and language use in collaboration with a more capable interlocutor (Clark & Graves, 2005; Lantolf, 2009). In the same vein, scaffolding can contain any kind of temporary support or assistance learners receive from teachers, peers, materials, and or the learning context to move towards independency (Birjandi & Jazebi, 2014).

Hence, as far as vocabulary learning is concerned, one of facilitative scaffolding strategies is the use of visual cues. Celce-Murcia (2002) states that the authenticity lent to the language classes via visual materials establish a direct link between the classroom setting and the outside world. Sadoski (2005) believes that if students are exposed to visually-mediated- or dual coding- instruction of collocations, especially abstract collocations, they may more easily remember them. The additional sensory perception provided by visual intervention can pave the way for learners to strengthen what they have learned (Mashhadi & Jamalifar, 2015). In recent years, researchers have cast more light on the role of pictures and visual intervention in teaching language skills (Afraz, Taghizade & Taghinezhad, 2018; Lestari & Misdi, 2016) and in the retention and retrieval of words and lexical combinations (Abdolmanafi Rokni & Karimi, 2013; Azma, 2017; Emirmustafaoglu & Gökmen, 2015; Kasraian & Pakfetrat, 2017; Pishghadam, Khodadady & Khosh Sabk, 2010).

To bridge the gap mentioned above, the present study tries to examine the effectiveness of visual cues via receptive and productive tasks with different loads of involvement on EFL learners' lexical knowledge. Actually, this study intends to address the following questions:

1. Are there any significant differences among the effects of visual cues using input-oriented tasks with different levels of involvement load on Iranian EFL learners' comprehension and production of lexical collocations?

2. Are there any significant differences among the effects of visual cues using output-oriented tasks with different levels of involvement load on Iranian EFL learners' comprehension and production of lexical collocations?

Method

This study used a quantitative method and a quasi-experimental design. The participants were given a pretest to check their initial knowledge of the target collections and a posttest to measure their attainment. There were also comparison groups with which the performance of each group was compared. However, although the assignment of each group of learners to different experimental conditions was done on the random basis, their initial selection was not random.

Participants

The participants of the present study were initially 208 intermediate level learners in four language institutes in Khorramabad, Iran. They consisted of male and female learners, ranging in age from 19 to 41. They were university students or graduates with different majors who were studying English in the institutes. Therefore, in order to homogenize them, KET (Key English Test) test was administrated to all the participants. 28 Students with very high and low proficiency level were excluded from the study. As a result, 180 participants remained, who were randomly assigned to six experimental groups, each with 30 participants. It should be mentioned that the number of male and female learners was not equal in each group.

Instruments

1. Key English Test. A sub-test of Key English Test was administered to select participants of approximately equal level of English language proficiency. The oral section of the test was not included due to administrative limitation, and only the reading and writing sections were administered. This sub-test consisted of parts one to seven of KET including 50 items. Parts of one, two and three measured receptive knowledge; part one contained five items in matching format; part two included five items in three-alternative multiple-choice format in which the participants had to choose one of the given choices to fill in the blank of a sentence; part three consisted of ten items in conversation format: in the first five items, the participants had to choose the best choice from among the given alternatives in response to a given cue. In the other five items, the participants were asked to match two columns which included two sets of statements to make a conversation between two people. Part four measured reading comprehension through a passage followed by seven multiple-choice items. Part five contained a cloze passage in which each blank had to be completed through choosing the best word from among three given alternatives; parts six and seven included productive items. Part six entailed the participants to complete five items, meaning that they had to read the descriptions of some jobs and write that job in the blanks provided. The initial letter of the target word was also given; part seven (the last part) contained ten gap-filling items. The participants were required to read a postcard and use their own knowledge to fill in the blanks. Each blank had to be filled with only one word. Since only a sub-test of KET was used in this study, the KR-21 formula was applied to estimate its reliability. The reliability index of the sub-test turned out to be .77.

2. Collocations Pre-test. A pretest was administered to all the participants before the treatment to measure their prior knowledge of the target lexical collocations. The pre-test was in fill in the blanks format and included 100 English sentences. Each sentence contained one lexical collocation. In other words, 100 lexical collocational items were contextualized in 100 English sentences. In each sentence, one part of a target lexical collocation was given and the other part was missing. The Persian equivalent of the whole collocation was provided at the end of sentence as a clue. The participants had to supply the missing words in the sentences.

To answer the research questions, the researchers developed six task types; three input-oriented tasks: True-false task (involvement load = 1), Matching task (involvement load = 2), Multiple-choice task (involvement load = 3), and three output-oriented tasks: Short-response (involvement load = 1), Fill in the blanks (involvement load = 2), Sentence formation (involvement load = 3). It is worthy of mention that the index of involvement load of these tasks was measured on the basis of three degrees of value (none, moderate, and strong) for each component of task-induced involvement (need, search, and evaluation) proposed by Hulstijn and Laufer (2001) and Laufer and Hulstijn (2001).

3. Post-tests. Two post-tests were developed by the researchers: a 40-item multiple-choice test and a 40-item fill in the blanks test in order to measure comprehension and production, respectively. Both tests were administered immediately after the treatment. Since the post-tests included only the items selected from among the target collocations, their content validity was taken for granted. The KR-21 formula was applied to estimate the reliability of the posttests. The reliability indices of the comprehension and production tests were .78 and .81, respectively.

Procedure

After the participants of the study were selected through convenience sampling, a sample of KET with the characteristics mentioned above was administered to ensure homogeneity. Those who scored between +1 and -1 standard deviation from the mean formed the main participants. Each group of participants was assigned to one of the experimental conditions randomly. Before the treatments, to reduce the effect of the participants' previous knowledge of collocations, the pre-test was administered to all experimental groups.

In the treatment stage, six kinds of task were designed for different treatment conditions. Each of the experimental groups received an average of seven new collocations each session; then they practiced using one of these tasks: True-false task (Task A); Matching task (Task B); Multiple-choice task (Task C); Short-response task (Task D); Fill-in-the-blank task (Task E); and Sentence formation task (Task F). The three tasks of True-false, Matching and Multiple-choice were input-oriented tasks with the involvement load indices of 1, 2 and 3, respectively. In addition, the Short-response, Fill-in-the-blanks, and Sentence formation tasks were output-oriented tasks with the involvement indices of 1, 2, and 3.

In task A, the learners received the glossed passages which contained new collocations. They were required to read the texts and respond to a set of questions in true-false format. In task B, the students read the passages glossed marginally and match two columns, which included two parts of a lexical collocation. In task C, the learners had to read the texts including the blanks, and looked up new lexical collocations in a dictionary. Then they had to insert the appropriate word in the blanks by choosing the best alternative from among four options. In task D, the learners had to read the glossed passages and then write the English equivalent of the lexical collocations given in Persian. In task E, the students were given non-glossed texts which consisted of blanks. To fill in the gaps, they had to pay attention to the Persian equivalent and one part of the collocation provided in each blank. In task F, the learners received marginally glossed passages that contained new lexical collocations. They were asked to read these texts and create new sentences using the target lexical collocations.

At the same time, the present study used the visual cues as an instructional scaffolding technique to support teaching lexical collocations to all of the experimental groups.

At the beginning of each session, new collocations were shown on screen one by one, and the learners were given a handout with the same collocations or images as those on the screen. The images were digital and real pictures obtained from the Internet. Then, learners were asked to start to work on the tasks.

The treatment lasted 17 sessions (2 sessions a week), of which the first two sessions were allocated to the KET test and the pretest, 14 sessions to treatment, and one session to the posttests. It is worthy of note that about an hour was allocated to the experiment each session because the learners took the books and materials related to their course as well. After the treatment, the two posttests were administered to all the participants.

The collected data were then summarized and submitted to statistical analysis. Two one-way Multivariate Analysis of Variance (MANOVA) procedures were utilized to answer the research questions.

Findings

Investigation of the First Research Question

This question attempted to examine the effect of visual cues technique using input-oriented tasks with three different involvement loads 1(True-false task), 2 (Matching task) and 3 (Multiple-choice task) on EFL learners' comprehension and production of collocations. To achieve this goal, the one-way MANOVA was applied. Before proceeding with the main MANOVA analysis, the data were checked for the assumptions. First of all, to assess for multivariate normality and outliers, the value of the Mahalanobis distance was compared against a critical value using a chi-square table. The maximum value of Mahalanobis distance (11.49) was less than the critical value (13.82), showing no multivariate outliers. To check the assumption of linearity, the relationship between the two dependent variables, i.e. comprehension and production was checked on the scatterplot matrix, and no curvilinear relationship was observed. For the multicollinearity assumption, the correlation between comprehension and production was assessed. The correlation coefficient (r = .32) indicated that the dependent variables were only moderately correlated. Thus, this assumption was not violated. In addition, the homogeneity assumption of variance-covariance matrices was checked via the value of the Box's M (Sig. = .09, $p < .001$). This assumption was also met. The results of Levene's test on the comprehension ($F_{(2,87)} = 2.77$, $p > .05$) and production tests ($F_{(2,87)} = 1.58$, $p > .05$) also showed equal variances. So this assumption was also observed.

After checking all the assumptions, the descriptive statistics on the comprehension and production post-tests were summarized (Table 1)

Table 1

Descriptive Statistics for the Effects of Visual Cues on the Post-tests

Test type	Task type	N	Mean	Std. Deviation
Comprehension	True-false	30	23.40	1.673
	Matching	30	24.33	1.881
	Multiple-choice	30	26.33	2.523
	Total	90	24.68	2.378
Production	True-false	30	24.00	1.893
	Matching	30	25.60	1.582
	Multiple-choice	30	27.00	1.286
	Total	90	25.53	2.011

Table 1 shows that the multiple-choice group (involvement level = 3) had the highest mean scores on the comprehension and production tests. The matching group (involvement level = 2) and the true-false group (involvement level = 1) stood in the second and third places, respectively.

Then, the multivariate tests were checked to assess the statistical significance of the differences among the effects of visual cues technique via the input-oriented tasks with varying involvement levels on the lexical collocations comprehension and production tests. The results are provided in Table 2.

Table 2

Multivariate Tests for the Effects of Visual Cues on the Post-tests

Effect		Value	F	Sig.	Partial Eta Squared
Intercept	Pillai's Trace	.997	15699.688[b]	.000	.997
	Wilks' Lambda	.003	15699.688[b]	.000	.997
	Hotelling's Trace	365.109	15699.688[b]	.000	.997
	Roy's Largest Root	365.109	15699.688[b]	.000	.997
Involvement Load	Pillai's Trace	.468	13.293	.000	.234
	Wilks' Lambda	.534	15.827[b]	.000	.269
	Hotelling's Trace	.867	18.826	.000	.302
	Roy's Largest Root	.862	37.489[c]	.000	.463

Table 2 shows that the Wilks' Lambda value is .53 (F = 15.827, p < .005), implying statistically significant differences among the impacts of involvement levels of 1, 2 and 3 on the comprehension and production tests. Meanwhile, since the multivariate tests showed a significant result, separate analyses on the comprehension and production tests needed to be conducted, with the results given in Table 3.

Table 3

The Results of Separate Analyses on the Comprehension and Production of Collocations

		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	Com.	134.756[a]	2	67.378	15.906	.000	.268
	Pro.	135.556[b]	2	67.778	26.246	.000	.376
Intercept	Com.	54858.711	1	54858.711	12950.546	.000	.993
	Pro.	58267.778	1	58267.778	22563.635	.000	.996
Involvement Load	Com.	134.756	2	67.378	15.906	.000	.268
	Pro.	135.556	2	67.778	26.246	.000	.376
Error	Com.	368.533	87	4.236			
	Pro.	224.667	87	2.582			
Total	Com.	55362.000	90				
	Pro.	55362.000	90				
Corrected Total	Com.	503.289	89				
	Pro.	360.222	89				

Applying a Bonferroni adjustment, an adjusted alpha level of .025 (instead of .05) was set as the significance level for the analyses. The results on the row labeled *Involvement Load* in Table 3 show that there are statistically significant differences among the impacts of different involvement loads on the comprehension and production of lexical collocations. In order to locate the differences, a Scheffe test was run, yielding the results on Table 4.

Table 4

Scheffe Test Results for the Effects of Involvement Loads on the Post-tests

	(I) group	(J) group	Mean Differences (I-J)	Sig.
Collocations Comprehension	1	2	-.93*	.002
		3	-2.93*	.000
	2	3	-2.00*	.001
Collocations Production	1	2	-1.33*	.008
		3	-3.00*	.000
	2	3	-1.66*	.001

Table 4 shows significant differences among the tasks with varying involvement loads. The implication is that as task involvement load goes up, the comprehension and production of lexical collocations improve. Hence, we could claim that the effect of scaffolding strategy of visual cues on the comprehension and production of lexical collocations got stronger as the involvement level of the tasks rose. Furthermore, the values of partial eta squared in the comprehension and production of collocations show that about 26 % and 37 % of the variance in the collocations comprehension and production test scores can be explained by task involvement levels.

Investigation of the Second Research Question

The aim of this question was to examine whether or not there are any significant differences among the effects of visual cues using three output-oriented tasks of the Short response task with involvement load 1, the Fill in the blanks task with involvement load 2, and the Sentence formation task with involvement load 3 on EFL learners' comprehension and production of lexical collocations. For this purpose, another one-way MANOVA was applied. The data were first checked for the assumptions. For the assumption of multivariate normality and outliers, the Mahalanobis distance value in the Residuals statistics table was checked. Compared to the critical value (13.82) in the chi-square table, the Mahalabonis distance had a lower maximum value (11.22). Thus, there were no multivariate outliers. To check the linearity assumption, the scatterplot matrix of the dependent variables was checked. It was confirmed that the relationship between the two dependent variables was not curvilinear. For the multicollinearity assumption, the correlation coefficient between the comprehension and production test scores was checked, showing a moderate correlation (r = .42). Thus, this assumption was also observed. In addition, the homogeneity assumption of variance-covariance matrices was tested via the value of the Box's M (Sig. = 1.10, $p < .001$). This assumption was also met. The results of Levene's test on the comprehension ($F_{(2,87)}$ = 1.03, $p > .05$) and production tests ($F_{(2,87)}$ = 1.15, $p > .05$) also approved the assumption of equal variances.

After all the assumptions were checked, the descriptive statistics on the comprehension and production tests were summarized in Table 5.

Table 5

Descriptive Statistics for the Effects of Visual Cues on the Post-tests

Test type	Task type	N	Mean	Std. Deviation
Comprehension	Short-response	30	24.23	1.072
	Fill-in-the-blanks	30	25.30	1.171
	Sentence formation	30	27.16	1.416
	Total	90	25.56	1.662
Production	Short-response	30	26.00	1.640
	Fill-in-the-blanks	30	27.70	1.087
	Sentence formation	30	29.50	2.161
	Total	90	27.73	2.202

Based on Table 5, the highest mean scores belonged to sentence formation group (load index = 3), fill-in-the-blanks group (load index = 2), and short-response group (load index = 1), respectively. In order to shed further light on the differences among the impacts of visual cues using three output-oriented tasks with varying loads on the lexical collocations comprehension and production tests, the multivariate tests were used, with the results presented in Table 6

Table 6

Multivariate Tests for the Effects of Visual Cues Technique on the Post-tests

Effect		Value	F	Sig.	Partial Eta Squared
Intercept	Pillai's Trace	.999	29581.766[b]	.000	.999
	Wilks' Lambda	.001	29581.766[b]	.000	.999
	Hotelling's Trace	687.948	29581.766[b]	.000	.999
	Roy's Largest Root	687.948	29581.766[b]	.000	.999
Involvement Load	Pillai's Trace	.630	20.018	.000	.315
	Wilks' Lambda	.376	27.110[b]	.000	.387
	Hotelling's Trace	1.641	34.876	.000	.451
	Roy's Largest Root	1.631	70.934[c]	.000	.620

Table 6 makes it clear that, in the section of the table named *Involvement Load*, the Wilks' Lambda value is .37 ($F = 27.110$, $p < .005$), meaning that there are statistically significant differences among the impacts of different involvement loads on the comprehension and production tests. In addition, since the values on the multivariate tests were significant, separate analyses on the comprehension and production tests were done. Table 7 presents the results.

Table 7

The Results of Separate Analyses on the Comprehension and Production of Collocations

		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	Com.	132.267[a]	2	66.133	50.544	.000	.537
	Pro.	183.800[b]	2	91.900	32.265	.000	.426
Intercept	Com.	58828.900	1	58828.900	44961.473	.000	.998
	Pro.	69222.400	1	69222.400	24303.264	.000	.996
Involvement Load	Com.	132.267	2	66.133	50.544	.000	.537
	Pro.	183.800	2	91.900	32.265	.000	.426
Error	Com.	113.833	87	1.308			
	Pro.	247.800	87	2.848			
Total	Com.	59075.000	90				
	Pro.	69654.000	90				
Corrected Total	Com.	246.100	89				
	Pro.	431.600	89				

Based on Table 7, the values in the row labeled *Involvement Load* reveal that the differences among the impacts of different loads of involvement on the comprehension and production of lexical collocations were statistically significant. To locate the differences, a Scheffe test was used, with the following results.

Table 8

Scheffe Test Results for the Effects of Involvement Loads on the Post-tests

	(I) group	(J) group	Mean Differences (I-J)	Sig.
Collocations Comprehension	1	2	-1.07*	.000
		3	-2.93*	.000
	2	3	-1.86*	.001
Collocations Production	1	2	-1.70*	.000
		3	-3.50*	.000
	2	3	-1.80*	.001

The results of Table 8 indicate that there are the meaningful differences among the groups with different involvement load indices. It implies that the tasks with higher involvement loads were more effective on the receptive and productive knowledge of lexical collocations. In addition, it could be claimed that the effect of scaffolding technique of visual cues on the comprehension and production tests grew as the involvement level of the tasks increased.

Moreover, based on the partial eta squared values on the above table, about 53 % and 42 % of the variance in the collocations comprehension and production test scores can be accounted for by task involvement load. Compared to the results of the first question, the results of this question may unveil that the effect of scaffolding technique of visual cues on lexical colocations instruction may be stronger in output-oriented tasks than input-oriented tasks.

Discussion

A notable finding of the present study revealed that using visual cues was an effective way in learning lexical collocations. This finding is in line with most of the previous studies in this area (Abdolmanafi Rokni & Karimi, 2013; Azma, 2017; Emirmustafaoglu & Gökmen, 2017; Kasraian & Pakfetrat, 2017; Pishghadam et al., 2010). These studies have suggested that visual information has a significant positive impact on retention of unfamiliar words compared to the conventional teaching method relying on giving verbal information alone. Meanwhile, in a study on the impact of visual scaffolding on reading comprehension, Lestari and Misdi (2016) found that the use of visual cues significantly improved students' text comprehension. In another study on the effectiveness of visual tools on speaking ability, Afraz et al., (2018) concluded that visual aids significantly developed learners' speaking proficiency.

The usefulness of visual intervention in language learning can be theoretically justified based on the notion that imagery representation might cause learners to process information through an additional channel. As a result, the learning and retention of new items may be facilitated (Milton, 2009; Yanguas, 2009). In addition, as Thornbury (2004) states, the authentic context provided via visual cues reflects the way the knowledge is applied in the real life. Actually, these cues make the words more memorable for learners. This finding of the present study may substantiate Richards and Rodgers' (2001) viewpoint that as far as the psychology of learning is at stake, there is an interwoven relationship between being fun and the effectiveness of a task. In other words, what makes the learning more enjoyable is what makes it more beneficial.

The findings of the present study also showed that as the involvement load of a task increased, EFL learners' knowledge of lexical collocations was improved. This may be theoretically justified on the basis of the concept of depth of processing proposed by Craik and Lockhart (1972); that is, the retention of any new piece of information fully relies on the amount of cognitive effort and the depth of its initial processing. Additionally, this finding of our study well substantiates Hulstijn and Laufer's (2001) Involvement Load Hypothesis, on the basis of which learning unknown lexical items is dependent upon the amount of involvement in processing these items, meaning that the higher the involvement load, the better the lexical learning.

This result of the present study is similar to that of the previous studies (Amini & Maftoon, 2017; Baleghizadeh & Abbasi, 2013; Jahangard & Movassagh, 2011; Jing & Jianbin, 2009; Nassaji & Hu, 2012), drawing the conclusion that the increase in the level of involvement load of tasks is a determining factor in the effectiveness on lexical learning. Contrary to the finding of the present study, however, Chaharlang and Farvardin (2018) reported that tasks with greater involvement index did not result in better vocabulary learning.

Moreover, the findings of the present study supported the role of task orientation in the learning of new lexical collocations. The results indicated that the output-oriented tasks highly facilitated the

comprehension and production of lexical collocations compared to input-oriented tasks, although both input- and output-oriented tasks were effective on learners' collocational knowledge. This finding of the present study is inconsistent with Hulstijn and Laufer's (2001) claim, based on which the learning of unfamiliar lexical items is conditional upon the amount of involvement in the process of these words regardless of task orientation. However, this finding substantiates Swain's (2000) contention, that, through output tasks, learners are enabled to notice their linguistic shortcomings and to modify output. Output-based practice engages students in the problem-solving processes by which they may achieve more precise and automatic use of vocabulary knowledge.

In partial agreement with the findings of the present study, Kaivanpanah et al., (2020) concluded that output-based tasks with higher involvement load were more effective on vocabulary achievement in both the immediate and delayed post-tests than input-based tasks. However, unlike the present study, they reported that input-based tasks with greater levels of involvement were not much effective on learners' vocabulary knowledge. One possible reason for this contrast may be the fact that in these two studies, the distribution of components in the input tasks differed from one another. In their study, two input tasks with involvement load indices of 3 and 0 were used, whereas the present study used three different input tasks with involvement load indices of 1, 2, and 3. The findings of Webb (2009) also endorse the findings of the present study. He found that although both productive and receptive tasks are effective on receptive and productive knowledge of vocabulary, the productive tasks result in higher gains in lexical learning.

In contrast with the findings of the present study, Khonamri and Hamzenia (2013) reported that two different tasks (i.e. one input and another output) with the similar level of involvement load performed almost similarly on new vocabulary learning and retention. The reason for this contrast may be related to the issues of participants' language proficiency level and limited treatment period. In Khonamri and Hamzenia's study, the students were chosen from among the intact classes of a language institute. Actually, before starting the treatment, no language proficiency test was administered to ensure the participants' homogeneity in terms of general English knowledge. Moreover, in that study, the treatment period was just limited to one session as the participants read only one reading text, and the acquisition of only ten words was assessed.

Conclusion

The results of the present study showed that imagery representation is a helpful way in teaching unfamiliar lexical collocations. Pictures make the theme and content stick in students' minds in a more durable way. Visual intervention may cause the idea to be more vivid and clear as little interpretation is needed for understanding. Actually, the proper usage of pictorial materials in language classes can create a comfortable, cheerful learning environment which fosters L2 learning. In line with this reasoning, it is recommended that language teachers adjust their teaching to the type of instruction in which students benefit from a variety of visual tools in task completion.

In addition, as the findings of the present study showed, to optimize collocations learning in English language classes, teachers should give more weight to output tasks than input tasks. As a matter of fact, language instructors and material developers should introduce a variety of more loaded productive tasks into classes via the use of appealing visual cues. This can leave a more viable effect on learners' memory and enhance their motivation in learning unknown lexical items. When the amount and type of scaffolding offered for each task are in line with the learners' needs and their development level (Krashen & Terrell, 1983), it will lead to more long-lasting learning. Thus, the findings of this study may be useful for language instructors and syllabus designers in the sense that they can design output tasks with suitable involvement load which also make use of pictorial and visual content to attract learners' attention.

Nevertheless, this study was carried out under certain limitations. To name only a few, the number of participants was limited given the number of variables. Time constraints could also have affected the findings in the sense that at least some of the treatments might have needed longer time intervals to exert their effect. Also, for practicality reasons, this study was limited to visual cues. This means that these findings open a new horizon for further research. Interested researchers can examine alternative modes such as audio-visual software or mobile-based tools on collocations learning. Moreover, further research may be carried out to compare task-induced involvement load across proficiency levels and in different educational contexts, i.e., at universities and at private institutes.

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