Effects of Massed vs. Distributed Implicit FonF on Receptive Acquisition of L2 Vocabulary Items

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The present study investigated the comparative effects of massed vs. distributed implicit focus on form (FonF) on the students' short-term and long-term receptive L2 vocabulary acquisition. The participants (*n* = 45) were selected out of a population of 153 according to the result of the placement test and were randomly assigned to three groups of massed FonF, distributed FonF, and control group. The massed group was taught three short passages in which 28 target words were made typographically salient. Subsequently, they answered the comprehension questions presented after each passage during one session. The distributed group received instruction during three consecutive days. During each session they answered only one third of the comprehension questions. The control group received the same passages in which no words were made salient. The results of the immediate and delayed post-tests revealed the following: (a) both massed and distributed groups outperformed the control group in the post-tests; (b) there was no difference between the massed and distributed group in short-term vocabulary acquisition; and (c) the distributed group outperformed the massed group in the delayed post-

test. These findings provide empirical evidence that Implicit FonF is beneficial to vocabulary learning; however, distributed FonF is more successful in long-term acquisition than massed FonF.

Keywords: Massed implicit focus on form; distributed implicit focus on form; receptive vocabulary acquisition; salient

Introduction

Form focused instruction (FFI) which contrasts with meaning-focused instruction (MFI) focuses on the question whether explicit attention and instruction of forms of a language can be useful for second language acquisition. Widdowson (1990) noted that learners do not easily infer knowledge of the language from the input they receive without the help of the teacher and on their own; hence an effort to attract students' attention to the linguistic forms may be necessary for language learning to take place (Ellis, 2006). On the contrary, there is the concept of meaning focused instruction which supports a noninterventionist view (Long & Robinson, 1998) in language teaching. Krashen (1982), who can be considered a noninterventionist, claimed that form focused instruction is unnecessary in the process of language acquisition and it impedes this natural process. However, the concept of FFI is not only limited to the traditional means of language teaching as in the Grammar-translation or the Audiolingual Method in which a synthetic syllabus was the medium of instruction. Form-focused instruction developed as a result of a long debate between the form-focused approach and meaning-focused approach to language teaching. Examples of such developments are the advent of new perspectives to FFI such as Schmidt's (1990) noticing hypothesis and Long's (1991) focus on form.

Form-focused instruction, as Ellis (2001) puts it, is used to refer to "any planned or incidental instructional activity that is intended to induce language learners to pay attention to linguistic forms" (p. 1). FFI involves both traditional approaches to language teaching and also communicative

approaches as can be observed on focus on form (FonF), "where attention to form arises out of activities that are primarily meaning-focused" (Ellis, 2001, p. 2). Nassaji and Fotos (20l1) state that research results show that FFI is effective when it is incorporated into a meaningful or communicative context.

Noticing formal aspects of language may be possible through some pedagogical means such as "focus on forms" and "focus on form" (Long, 1991; Long & Robinson, 1998), "input enhancement" (Sharwood Smith, 1993), "output production" (Swain, 1985), and "interaction" (Long, 1991).

Focus on form, as Long (1991) noted, refers to any types of class activities that overtly attracts students' otherwise elusive attention to linguistic forms that incidentally arise in meaning-focused lessons. This can take several forms such as giving students explanation about grammatical or lexical elements while doing a communicative activity or asking students questions regarding the linguistic elements.

Input enhancement (Sharwood Smith, 1991), as one of the pedagogical means of form-focused instruction focuses language learners' attention on linguistic forms by making the forms perceptually salient. If input enhancement occurs in written contexts, it is regarded as visual input enhancement, such as bolding the target forms (grammatical, lexical, phonological, etc.), underlining or italicizing them.

The technique which is utilized in the present study to draw participants' attention to forms (lexical form) is visual input enhancement. However, it is used in two different conditions of instruction, namely, massed and distributed instruction. In other words, massed visual input enhancement and distributed visual input enhancement are compared to each other in terms of their effectiveness on vocabulary acquisition.

Massed and distributed teaching is not a new concept in the area of teaching and specifically language teaching. This concept concerns the *time* of teaching. In massed condition, the teaching time is concentrated into a short period of time; however, in distributed condition, the teaching time is spread over a longer period of time.

Burdick (1977) provides a definition for these two different types of

instruction. According to Burdick (1977), massed instruction is a kind of instruction in which no rest is allowed between the teaching sessions. Distributed instruction; however, is interspersed with rest times.

Schmidt (1991), however, defined massed and distributed teaching differently. He contends that massed instruction can have short periods of rest, but the rest time must be very short relative to the instruction sessions. The distributed instruction definition based on Schmidt (1991) suggests that in this type of instruction the amount of rest between sessions is long in comparison with instruction sessions. Later, he modified his definition of distributed practice and suggested that in distributed practice the amount of rest between the sessions is either equal or more than the session time.

The present study focuses on the comparative effects of massed implicit focus on form (visual input enhancement) and distributed implicit focus on form on students' short-term and long-term receptive acquisition of words. Receptive vocabulary (also called recognition vocabulary or passive vocabulary) is referred to as "the total number of words a person understands, either in reading or listening" (Richards & Schmidt, 2002, p. 447). The study uses a pre-test, immediate post-test and delayed post-test design to measure the effects of the mentioned instructions on acquiring the target words receptively in the short and long run.

Such being the case, the present study seeks to answer the following research questions:

1) Is implicit FonF (visual input enhancement) beneficial to short-term and long-term receptive vocabulary acquisition?
2) Is there a significant difference between the effects of massed and distributed implicit FonF on the short-term receptive vocabulary acquisition?
3) Is there a significant difference between the effects of massed and distributed implicit FonF on the long-term receptive vocabulary acquisition?

Review of Literature

Form-focused instruction (FFI) is possible through some pedagogical means such as focus on form, input enhancement, output production, etc. The differences these means of FFI make in the learning of different language elements have always been the focus of attention of many experts of the field. In the present study, only two of these pedagogical means are selected to be elaborated, "focus on form" and "input enhancement".

Focus on Form (FonF)

As a reaction to the problems caused by the traditional approaches to language teaching and also the meaning-focused approach, Long (1991) proposed a new approach called "focus on form" (FonF). Long believed that meaning-focused instruction, with its emphasis on pure meaning-based tasks, may not be the only effective way in learning a language. Hence, he proposed an approach which he claimed to have "the strength of the meaning-centered approach, while dealing with its shortcomings" (Long & Robinson, 1998, p. 22).

Long (1991, pp. 45-46) defines FonF as follows: "focus on form…overtly draws students' attention to linguistic elements as they arise incidentally in lessons whose overriding focus is on meaning or communication". Long's definition of FonF distinguishes it from "focus on forms" and also "focus on meaning" approaches. The former, represents a synthetic approach in which it is assumed that language is composed of a sequence of grammatical forms that can be learned additively. However, the latter, represents an analytic approach which emphasizes meaning-centered tasks with little, if any, attention to form, and assumes that language learners "are able to analyze language inductively and arrive at its underlying grammar" (Nassaji & Fotos, 2011, p. 10).

Focus on form; however, pays attention to form and at the same time to meaning. As Long (1991) puts it, "a syllabus with a focus on form teaches

something else, biology, mathematics, workshop practice, automobile repair, the geography of the country where the foreign language is spoken, the cultures of the speakers, and so on" (pp. 45-46).

Input Enhancement

Input enhancement, which is one of the pedagogical means of FFI, was first introduced by Sharwood Smith (1991). The goal of input enhancement is to focus learners' attention on language forms by making the forms more perceptually salient. Perceptual salience, as Nassaji and Fotos (2011, p. 38) put it, "refers to features of the target structure that are easily noticed". Hence, *input enhancement* is the process of enhancing the perceptual saliency of language input.

Sharwood Smith (1991) made distinctions among different kinds of input enhancement; explicit vs. implicit input enhancement and internal vs. external input enhancement. Explicit enhancement is the overt attention drawn to forms in which the teacher explicitly focuses students' attention to specific linguistic forms through metalinguistic explanation and rule presentation. Implicit enhancement, on the other hand, is focusing students' attention to forms while they are engaged in a communicative activity. Implicit input enhancement may be done through indirect clues such as a visual gesture to show a learner that there is an error in his/her production (Nassaji & Fotos, 2011).

Input enhancement, according to Sharwood Smith (1991) can also be divided into internal and external enhancement. In the case of internal enhancement, the students themselves notice a form through using learning strategies or internal cognitive processes. On the contrary, in the case of external enhancement, a form is noticed by learners through external means, such as the teacher, or highlighting some parts of the input typographically. This case is what has been referred to as *textual enhancement* or *visual input enhancement*.

Textual Enhancement

Textual enhancement (visual input enhancement) attempts to draw learners' attention to some specific forms that otherwise may not be noticed (Izumi, 2002). This attention drawing occurs externally, through raising the saliency of particular forms in the written input typographically, i.e., by **bolding**, *italicizing*, or <u>underlining</u>. Visual input enhancement can be regarded as an *implicit input enhancement,* in which learners' attention is drawn to forms unobtrusively, the primary focus is still on meaning rather than form, and it doesn't involve any explicit instruction (Nassaji & Fotos, 2011). Hence, based on the above explanations, visual input enhancement is regarded as a kind of focus on form approach since it meets the requirements of it, i.e., the primary focus is on meaning while learners' attention is temporarily drawn to a specific form.

Previous studies conducted in the area of input enhancement produced mixed results about its effectiveness. Some of these studies (Shook, 1994; Williams, 1999) found facilitative effects for input enhancement. There are also some other studies (Alanen, 1995; Robinson, 1997; White, 1998) that found limited effects for input enhancement on learning. Furthermore, in some studies (Leow, 1997) no significant effect was found.

In a study conducted by Alanen (1995), the effects of rule presentation and visual input enhancement on the acquisition of some structural elements were investigated. Four groups, i.e., three experimental groups and one control group participated in the study. The manipulated input of the experimental groups was in three different forms: (a) visual input enhancement of the target features through italicizing; (b) explicit rule presentation; and (c) a combination of both. The results indicated that the mixed group outperformed the other groups. In short, the mixed group performed better than the rule presentation group, and the rule presentation group performed better than the visual input enhancement group. The results also show that visual input enhancement may have a partial positive effect on noticing and using the target features.

In a more recent study, Lee (2007) found input enhancement facilitative in learning the target forms. The study examined the effectiveness of textual enhancement and topic familiarity while doing a meaning-focused reading task on the acquisition of some grammatical elements. Students' performances were analyzed with respect to their ability to identify erroneous passive sentences in English; and their scores in reading comprehension tasks. The findings of the study indicated that textual enhancement had beneficial effects on the learning of the selected forms; however, it did not have positive effects on comprehension. In other words, textual enhancement may hinder students' comprehension of reading tasks. On the other hand, topic familiarity was effective in comprehension, but it didn't have much favorable effects on learning the forms. In short, Lee (2007) found some benefits for textual enhancement.

Izumi (2002) conducted a study in which the differential effects on visual input enhancement (an external attention drawing technique) and output (an internal attention drawing technique) on the acquisition of a grammatical form (English relativization) was examined. The study aimed at finding out if producing output promoted noticing and subsequently learning of the selected form; and if the noticing (induced by output) was the same as the noticing induced by visual input enhancement. The target form was presented to the participants through a reading task. The results of the study suggested that the group which produced output outperformed the group which received input only; and the effectiveness of visual input enhancement on the acquisition of the form was not comparable to that of output. In other words, visual input enhancement did not lead to much learning. In short, output was more beneficial to learning than visual input enhancement.

In a very recent study, Russell (2014) replicated Izumi's study; however, she comparatively investigated the effects of visual input enhancement and output on the acquisition of the Spanish future tense. Fifty-five first-semester students of Spanish participated in Russell's study. The results, like Izumi's study, supported the better noticing function of output in comparison with visual input enhancement. Russell (2014) found that output production along

with exposure to future tense forms led to inductive learning of the target form.

An investigation on the previous studies conducted in the area of focus on form and visual input enhancement as one of its pedagogical means reveals that the studies have led to mixed results about the effectiveness of visual input enhancement on learning linguistic forms. Furthermore, the number of studies on visual input enhancement which examined its effects on acquiring lexical forms of a second language is not many. It is very important to notice that the term *form* is not exclusively used for grammatical aspects of language. Doughty and Williams (1998) and Ellis, Basturkmen, and Loewen (2001) believe that the term *form* can refer to phonology, vocabulary, grammar, and even discourse. With regards to vocabulary, de la Fuente (2006) noted that the goal of tasks involving L2 vocabulary is not only the meanings of the words but also the acquisition and expansion of word's knowledge. Considering vocabulary as a kind of form and focusing on it in language tasks are thought to provide an opportunity to further focus on the formal aspects of vocabulary items, to present the words in context, and to move from fluency to accuracy (de la Fuente, 2006).

As mentioned previously, the objective of vocabulary-based tasks in language classes is actually expansion of vocabulary knowledge and not only meaning of words (de la Fuente, 2006). One of the most conspicuous topics in the field of vocabulary acquisition is the distinction between receptive and productive acquisition of words. The former refers to the total number of words a person can understand in reading or listening. This has also been called passive vocabulary (Richards & Schmidt, 2002). However, the latter refers to the ability of learners to actively produce the words in speech and writing. This is also referred to as active vocabulary knowledge. The importance that receptive vocabulary knowledge has in language learning and communication cannot be neglected since it is assumed that vocabulary learning progresses from receptive or passive knowledge to productive or active knowledge of words which is a highly necessary condition for communication (Meara, 1996; Nation, 1990). In other words, having the

receptive knowledge can be regarded as a prerequisite for the productive knowledge and ability of vocabulary items.

Such being the case, conducting a research study on this topic might be warranted in order to test if focusing on words as a kind of form is actually effective in their receptive acquisition. In addition, the effectiveness of visual input enhancement as an external attention drawing technique has never been investigated within massed and distributed instruction conditions.

In the present study, three groups (each consisting of 15 students) participated in the study, a massed group, a distributed group and a control group. An immediate post-test and a delayed post-test were designed by the researchers in order to measure the short-term and long-term effects of massed and distributed visual input enhancement on receptive vocabulary acquisition. Using an internal consistency method of estimating reliability (KR-21), the reliability of both tests was also estimated prior to the administration of them to the real participants which is elaborated in details in the method section.

Method

Participants

The participants of the study ($n = 45$) were selected from a population of 100 male beginner students enrolling in the Iran Language Institute English classes. In order to select a homogenized group of participants, the population was given the Total Placement Test, which is a highly reliable test, published by Pearson Education (2006). The results of the placement test led the researcher to select 45 homogenized elementary students whose scores were within one standard deviation above and below the mean score of the test. Participants' ages ranged from 14 to 17 years old. Subsequently, the researcher randomly assigned the selected homogenized participants into three groups of 15 students. These groups were 1) massed implicit FonF, 2)

distributed implicit FonF, and 3) the control group in which no implicit FonF was used.

Instruments

The present study uses a pre-test, treatment, post-test design for each group of the study, hence the instruments include a placement test (Total Placement Test) published by Pearson Education (2006), a pre-test, three short passages (for the contextualization of the target words) and some comprehension questions following each passage, an immediate post-test and a delayed post-test. It is necessary to mention that by using the KR-21 method of estimating reliability, the reliability of the entire researcher-made tests, and the placement test was estimated against a population of students ($n = 50$) studying English at different proficiency levels at the Iran Language Institute. The results of the reliability estimation of the tests are displayed in Table 1.

TABLE 1
The Results of the Reliability Estimation of the Tests

Test	Number of Items	n	M	Variance	Reliability
Placement test	100	50	45.46	185.68	0.87
Pre-test	28	50	19.86	41.24	0.89
Immediate post-test	28	50	18.32	36.23	0.85
Delayed post-test	28	50	20.09	44.94	0.90

Pre-test

The pre-test was composed of 28 items each of which dealt with one of the target vocabulary items. The target words were selected from the passages that the participants are supposed to read during the treatment sessions. The pre-test was given to the participants of all groups one week prior to the treatment sessions. Further, before the administration of the pre-test, it went through all the stages of reliability, i.e., to see how reliable the test was, it

was piloted and given to a group of 50 students studying at different levels of proficiency. The reliability of the test was estimated to be .89 through KR-21 formula.

Passages

During the treatment sessions three short texts were selected from a series of passages called Scott Foresman published by Pearson Education. The readability index of the passages was checked to ensure that they were appropriate for English students of 14 to 17 years old. The passages were also accompanied by some comprehension questions, which were absolutely essential for our study. The researcher increased the saliency of the target words in the passages by using two typographical means of *bolding* and <u>underlining</u>. In other words, the perceptual saliency of the target words were increased through visual input enhancement. Each passage was followed by some comprehension questions, which had to be answered by the participants of each group after reading the passage.

Comprehension questions

It was previously mentioned that the comprehension questions following each passage are very essential for the study. The role they play is that, by answering them, students can keep their focus on meaning rather than form. In other words, these questions make the activity meaning-based while there is still some temporary attention to form. This is the cornerstone of focus on form as proposed by Long (1991).

Immediate post-test

An immediate post-test, designed by the researcher, was administered immediately after the completion of the treatment sessions. This test was designed to measure the short-term effects of the specific treatment each

group received. The immediate post-test was also made reliable by the researcher. It was given to a group of 50 students studying at different proficiency levels, and the reliability was calculated through the KR-21 formula and estimated to be 0.85 which may be considered an acceptable level of reliability for a test.

Delayed post-test

The delayed post-test, which was used to measure the long-term effects of the independent variables, was an altered version of the pre-test. The difference between the two is that correct responses were distributed in a different fashion in each item. It is important to mention that, in order to prevent jeopardizing the previously estimated reliability of the test, no changes were made to the order of the items. The only change was on the distribution of the correct responses within each item. The reliability of the new test was also estimated to be 0.9 using KR-21 formula of internal consistency. Furthermore, since the delayed post-test was administered three weeks after the completion of the treatment sessions, it may be rational to claim that the learning effect of the test was kept to a minimum. In other words, the time interval between the administration of the pre-test and the delayed post-test was four weeks, which is assumed to be an appropriate time interval to reduce the learning effect of the pre-test.

Glossary of words

All three groups of the study were presented with a researcher-made glossary of words which included many of the words embedded in the passages along with the target words. It is worth mentioning that since all groups received the same glossary during their treatment sessions and the condition was the same for all groups, it did not interfere with their learning and performance in any of the tests. The reason for using the glossary was that such an action could stop learners from asking vocabulary-related

questions which in turn could change the activity to explicit focus on form. In other words, if learners were allowed to ask questions, the activity would be considered an explicit focus on form rather than an implicit one.

Data Collection Procedure

As mentioned earlier, a placement test (Total Placement Test) published by Pearson Education (2006) was given to 100 elementary-level students. Students whose scores were within one standard deviation above and below the mean score were selected for participating in the study. Hence, 45 students, whose ages varied from 14 to 17, were randomly assigned to three groups; each group consisted of 15 homogenized, elementary, male students. One week prior to the beginning of the treatment sessions, participants of each group took a multiple-choice pre-test which consisted of 28 items. This test was designed to ensure that the participants were not familiar with the selected target words. Simply put, it could be seen if these words were unknown to students.

One week after the administration of the pre-test, the treatment sessions began, and each group was taught the passages according to its particular treatment. The three groups of the study are as follows:

Group 1 massed implicit FonF (visual input enhancement)
Group 2 distributed implicit FonF
Group 3 control group, i.e., no visual input enhancement

Group 1 massed implicit FonF (visual input enhancement)

In this group, all three passages were given to students during one session with a massed condition which lasted for about 45 minutes. Each passage with its comprehension questions was given 15 minutes to be read and answered. That makes 45 minutes for reading all three short passages and answering all the comprehension questions following them.

During the reading phase, the participants were provided with a researcher-made glossary of the words used in the passages. Hence, learners were not allowed to ask any questions regarding the vocabulary items. The reason behind this is that, by providing a glossary, the researcher removed any chance that learners ask questions of the teacher which would then lead to explicit focus on form during the reading task. As it is stated, *implicit FonF* is the approach that should be used. By asking questions, learners would change the *FonF* into an *explicit FonF* which is not the concern of the present study.

By the time the reading of each passage was finished, participants were asked to answer the comprehension questions following it all at once and then move on to the second and subsequently the third passage. This task took 45 minutes to be completed.

After the completion of the reading phase, an immediate post-test which measured the participants' short-term receptive knowledge of the target words was administered.

Group 2 distributed implicit FonF

The second group received the same set of passages and answered similar comprehension questions. The only difference between this group and the former one is that, in this group, all the materials were presented to the participants during three consecutive days, i.e., in three 15-minute sessions.

On each session, learners were provided with all three passages; however, they were asked to reply to only one-third of the comprehension questions following each passage. In other words, all three passages were given to learners each day, but the comprehension questions were divided into three equal parts to be answered during each session. The questions (one third) that had to be answered in each session were related to all three texts rather than one of the passages. The reason behind this division is that, by doing so, we were able to have one distributed instruction as a whole. In other words, if one passage had been given to learners on day one, another passage on day two, and finally the last one on day three, we would have ended up having

three massed instructions rather than one whole distributed instruction. This would have jeopardized the internal validity of the research.

Group 3 control group, i.e., no visual input enhancement

In this group the same passages were given to the participants; however, there was no visual input enhancement. Also, in order to prevent the activity to become a focus on form approach, no comprehension questions were asked of the learners. Learners were also told that after reading the passages, they were supposed to take an immediate post-test, so they just had to read the passages for themselves. They were also not permitted to ask questions of any kind of the teacher.

Three weeks after the treatment sessions, a multiple-choice delayed post-test was given to the three groups. This test was used for investigating the long-term effects of the independent variables (massed and distributed implicit FonF) on receptive vocabulary acquisition.

Data Analysis

In this study, which is an experimental one, three between-groups one-way ANOVA were used to compare the groups' performances in each test. A one-way ANOVA was used for the pre-test which compared the mean scores of all three groups before the treatment sessions. This could confirm the claim that the groups were homogenized and equal in their knowledge of the target words prior to the treatment sessions.

The second and third one-way ANOVA tests were performed for the immediate and delayed post-tests which compared the mean scores of all groups in these tests. Also, the Tukey HSD test was used as a post-hoc analysis to find which group had a statistically significant performance compared with the two others.

Results

Pre-test

The results of the one-way ANOVA test for the pre-test (given to learners one week before the treatment sessions) indicate that there was no significant difference among the three groups. Table 2 displays the descriptive statistics for the pre-test.

TABLE 2
Descriptive Statistics for the Pre-test Results

	n	*M*	*SD*
Group 1 massed FonF	15	3.93	2.05
Group 2 distributed FonF	15	4.27	1.53
Group 3 control	15	3.67	2.29
Total	45	3.95	1.95

As displayed, mean differences between the three groups are not high, which indicates that these groups might not be significantly different from each other. However, this claim is proved through conducting a one-way ANOVA test for the pre-test. In Table 3, the results of the one-way ANOVA of the pre-test for the three groups are shown.

TABLE 3
One-way ANOVA Results of the Pre-test for the Three Groups

	Sum of Squares	*df*	*F*	*Sig.*
Between groups	2.71	2	.35	.71
Within groups	165.20	42		
Total	167.91	44		

Note. The mean difference is not significant. $F(2, 42) = .35$, $p = .71$, $p > .05$

Table 3 indicates that the difference among the groups of the study is not significant at the 0.05 level. As it is evident from the ANOVA results, *p*

= .71 which is higher than the alpha level ($\alpha = 0.5$, $p > .05$).

This suggests that the three groups of the study didn't have any significant differences in their performances in the pre-test prior to the treatment sessions. Besides, the low mean scores displayed in Table 2 show that the participants did not have much knowledge about the selected target words, and that most of the vocabulary items were unknown to them.

Immediate Post-test

In Table 4 the One-way ANOVA results for the three groups are displayed respectively.

TABLE 4
One-way ANOVA Results of the Immediate Post-test

	Sum of Squares	df	F	Sig.
Between groups	1932.13	2	129.77	.00
Within groups	312.67	42		
Total	2244.80	44		

Note. The mean difference is significant. $F(2, 42) = 129.77$, $p < .05$

The results of the ANOVA reveal that there is a difference among the three groups ($p < .05$). From the results of Table 4, it can be argued that the amount of p-value (.000) is lower than the alpha level ($\alpha = .05$).

In order to find out what group specifically made the difference, there is a need to have a post-hoc analysis which is the Tukey HSD test in this case. The results of the multiple comparisons are outlined in Table 5.

TABLE 5

Multiple Comparisons of Groups in the Immediate Post-test Through Tukey HSD Test

(I) groups	(J) groups	*Mean Difference (I-J)*	*Sig.*
Group 1	Group 2	-.07	.998
	Control group	13.87*	.000*
Group 2	Group 1	.07	.998
	Control group	13.93*	.000*
Control group	Group 1	-13.87*	.000*
	Group 2	-13.93*	.000*

Note. The mean difference is significant at the 0.05 level.

Furthermore, the data displayed in Table 6, provide empirical evidence on the enhanced performance of any of the groups.

TABLE 6

Tukey HSD (Homogeneous Subsets)

Groups	*n*	Subset for alpha = 0.05	
		1	2
Group 3 control group	15	10.80	
Group 1 massed FonF	15		24.67
Group 2 distributed FonF	15		24.73
Sig.		1.00	.998

Note. Means for groups in homogeneous subsets are displayed.

In Table 6, the groups which fall under the same subset are not significantly different from each other. Hence, Group 1 and 2 are not statistically different.

According to the results of the above analysis, two important conclusions can be drawn about the short-term effects of massed and distributed implicit FonF. The conclusions drawn from these results are as follows:

First, it is evident from the results of Tables 4 and 5 that *massed implicit*

FonF group is not statistically different from *distributed implicit FonF* group in the immediate post-test (*p*-value = .998, $p > .05$). This finding indicates that teaching through massed implicit FonF and distributed implicit FonF do not affect short-term receptive vocabulary acquisition differently. Hence, sufficient evidence is found that there is no significant difference between the effects of massed and distributed implicit FonF on the short-term receptive vocabulary acquisition.

Second, the performance of massed implicit FonF group was significantly different from the performance of the control group, which wasn't taught through implicit FonF (*p*-value = .00, $p < .05$). This finding suggests that the group which had FonF through visual input enhancement outperformed the group which did not have any in the immediate post-test (Table 6). This finding provides an answer to the first research question by implying that implicit FonF (visual input enhancement) has positive effects on short-term receptive acquisition of vocabulary items.

Delayed Post-test

Table 7 displays the One-way ANOVA results for the delayed post-test.

TABLE 7
One-way ANOVA Results of the Delayed Post-test

	Sum of Squares	df	F	Sig.
Between groups	1551.51	2	84.03	.00[*]
Within groups	387.73	42		
Total	1939.24	44		

Note. The mean difference is significant at the 0.05 level.

The results of Table 7 reveal that there are significant differences in the performances of the groups in the delayed post-test. The results of the Tukey test (Table 8) displays which group made the difference significant.

TABLE 8
Multiple Comparisons of Groups in the Delayed Post-test Through the Tukey HSD Test

(I) groups	(J) groups	*Mean Difference (I-J)*	*Sig.*
Group 1	Group 2	-6.13[*]	.00
	Control group	8.20[*]	.00
Group 2	Group 1	6.13[*]	.00
	Control group	14.33[*]	.00
Control group	Group 1	-8.20[*]	.00
	Group 2	-14.33[*]	.00

Note. The mean difference is significant at the 0.05 level.

TABLE 9
Tukey HSD (Homogeneous Subsets)

Groups	*n*	Subset for alpha = 0.05		
		1	2	3
Group 3 control group	15	9.00		
Group 1 massed FonF	15		17.20	
Group 2 distributed FonF	15			23.33
Sig.		1.00	1.00	1.00

Note. Means for groups in homogeneous subsets are displayed.

The results shown in Tables 8 and 9 provide an answer to the third research question. As it is evident all three groups are significantly different from each other in the delayed post-test. By studying Tables 8 and 9, two important conclusions can be made.

First, there is a significant difference between the performance of *massed implicit FonF* group and *distributed implicit FonF* group in the delayed post-test ($p < 0.5$). Furthermore, the results of Table 9 indicate that Group 2 had a higher mean score and was in a superior status than Group 1. Simply put, these two groups fall under different subsets (subsets 3 and 2). Hence, Group

2 outperforms Group 1 in the delayed post-test.

We can imply from this finding that the distributed condition for implicit FonF had a more positive effect on the long-term receptive vocabulary acquisition than the massed condition. This is very important to remember that distributed and massed conditions for implicit FonF were not different with each other in short-term receptive vocabulary acquisition.

Second, there is a significant difference between the performance of Group 1 and Group 3, the control group, in which no massed implicit FonF was used ($p < .05$). The results of table 8 indicate that Group 1 outperformed the control group in the delayed post-test. Hence, it can be concluded that implicit FonF (visual input enhancement) affects long-term receptive vocabulary acquisition positively.

Discussion

The present study investigates the focus on form approach and its effects on the short-term and long-term receptive acquisition of L2 vocabulary items by English learners. The study aimed to find out if implicit FonF which is "visual input enhancement" (Sharwood Smith, 1991) in this case has any effects on receptive vocabulary acquisition in the short and long run. The effectiveness of visual input enhancement on vocabulary acquisition has also gone under investigation in terms of two different conditions of instruction, namely *massed practice (MP)* and *distributed practice (DP)*. In other words, it was aimed to examine the differential effects of massed implicit FonF and distributed implicit FonF on short-term and long-term receptive vocabulary acquisition.

The first research question deals with the effectiveness of implicit focus on form (visual input enhancement) on the short-term and long-term receptive acquisition of words. The results obtained from the between-group comparisons of *massed implicit FonF* group and *the control group* suggest that visual input enhancement may be effective for both short-term and long-

term receptive acquisition of words.

This finding may be explained in light of the noticing effects of visual input enhancement. As it was previously referred to visual input enhancement is an implicit and unobtrusive technique to draw attention to forms (Doughty & Williams, 1998) in which the perceptual saliency of the forms are increased through some typographical devices such as bolding, underlining, italicizing, etc. According to Winke (2013), enhancement increases the likelihood that the students will notice the target forms. This noticing is claimed to be a vital precondition and the first step toward learning the forms (Leow, 1990; Robinson, 1995; Schmidt, 1990, 2001; Sharwood Smith, 1991; Tomlin & Villa, 1994). The concept of noticing was first proposed by Schmidt (1990).

In his "noticing hypothesis," Schmidt (1990) contended that language learners will not learn a form unless they pay attention and notice the form. He claimed that noticing is a very important condition for turning input into intake. In the input that learners receive in language classes, there are many forms, which need attention and noticing to be learned. Schmidt (1990) and Sharwood Smith (1991) contended that many of these forms are non-salient to learners; hence, noticing may be a good way to foster the attention necessary for learning.

The highlighted forms in the input made the participants of Group 1 take a longer look at the target words while reading, which could help them notice the forms more than other features present in the input. Further, all three groups (1, 2, & 3) received the glossary of words which assisted them with reading and prevented an explicit focus on form activity. Since the glossary contained many of the vocabulary items of the passages and also the target words, the learners' attention in both groups were not attracted to only the target words which, subsequently, could result in the misinterpretation of the results. In other words, all the participants of the three groups used the glossary as a tool to comprehend the passages better and not to ask vocabulary questions during the treatment sessions. Hence, the only factor which differentiates between the visual input enhancement group, and the

control group is the presence of the implicit focus on form (visual input enhancement) in Group 1, which led to noticing of the lexical forms on the part of the learners. The effects that such noticing has on subsequent learning of a form have been argued by researchers who claimed that to learn an L2 feature, at least to learn it receptively, learners must first notice that feature; hence, noticing a feature or a form is the first step of learning it (Leow, 1997; Leow, Johnson, & Zarate-Sandez, 2011; Rosa & Leow, 2004).

Noticing a form through whatever means is possible is the first step of a series of cognitive processes happening in the brain. When a novel form is detected by learners in the input, noticing occurs as a result (Robinson, 1995), i.e., the learner recognizes or becomes aware that he or she does not understand a form yet. This awareness represents the start of a cognitive change in the brain (Sachs & Suh, 2007). This cognitive change has also been referred to as restructuring of the interlanguage system (Carroll, 2001; Selinker, Kim, & Bandi-Rao, 2004). After learners notice a form in the input, they go through the second stage in which they make a comparison between their existing knowledge (interlanguage) and the novel form. The result of this comparison led learners to form a new hypothesis which is based on the difference between their interlanguage and the new form; finally, the new form might be learned.

A very important problem that may happen during these steps is that, as Winke (2013) noted, this awareness or noticing does not happen all at once. It might happen through stages or sometimes it may not happen at all. For instance, a learner might at first notice a form in the input but at later stages abandons it. The solution to this problem is that the form which has been made salient once should be kept salient in all stages of leaning. If a form is kept salient more than once, it can go through all the stages referred to above, which might lead to learning. The target forms presented to Group 1 were kept salient by the comprehension questions following the passages. The comprehension questions were selected in a way that answering them would necessitate paying attention to the forms (vocabulary items), and without knowing the meanings of the words, participants were not able to answer the

questions. This may be a reason why learners did not leave focusing the forms and subsequently learned them.

The superior performance of Group 1 over the control group might also be explained in light of the *information processing model* proposed by McLaughlin, Rossman, and McLeod (1983). They distinguished between two mechanisms of processing, controlled and automatic processes. The capacity of controlled processes is limited; however, automatic processes are permanent and not limited. When a learner is learning something new, such as a new skill, the process at hand is controlled and limited in which only a few aspects of the skill can be paid attention to (Brown, 2007). In other words, the learner cannot focus on all aspects of the new material or skill being learned. This fact, according to McLaughlin et al. (1983), makes us think of learners as processors whose limited capacity cannot simultaneously attend to all elements of the input they receive.

When learners are taught by using visual input enhancement, their limited processing capacity focuses on those features that were made salient. By making the target forms salient to learners, we deemphasize the forms which are not the focus of learning; and consequently, direct learners' limited capacity towards the target forms. This will help learners easily go through the stages of learning explained above.

The results obtained from this study, thus far, are in accord with some empirical studies (Lee, 2007; Shook, 1994; Tajeddin & Chiniforoushan, 2011; White, 1998; Williams, 1999) which supported the positive effects of visual input enhancement on learning, particularly learning grammatical forms. For instance, in Shook's (1994) study, the group which received enhanced passages performed significantly better than the group which did not receive enhanced texts in the post-test. Shook concluded that visual input enhancement has a positive effect on learners' ability to produce the grammatical items. Tajeddin and Chiniforoushan (2011) is another example of a research study which supports the findings of the present research. They investigated the effects of lexical visual input enhancement on the receptive and productive acquisition of words and found that visual input enhancement

was more facilitative in improving receptive vocabulary acquisition than productive vocabulary knowledge. Hence, in their study too, a positive role was found for lexical input enhancement. The findings of Lee (2007) are also in line with the results of the present study. Lee investigated the effectiveness of visual input enhancement and topic familiarity while doing a meaning-centered activity on the acquisition of some grammatical forms. The findings suggested that visual input enhancement had positive effects on learning of the target form.

The second and third research questions deal with the effectiveness of two very different instructional conditions on learning target vocabulary items receptively. These conditions are (a) visual input enhancement in a massed session and (b) visual input enhancement in a distributed condition which consists of three shorter sessions in three consecutive days. The question aims to find out if there are any significant differences between massed and distributed visual input enhancement in receptive word acquisition. The results (see Table 6 & 8) indicated that there was no significant difference between massed and distributed conditions in short-term receptive vocabulary acquisition ($p = .998, p > .05$); however, in the long run, these two groups actually differed significantly ($p = .000, p < .05$).

These findings can be interpreted in light of a factor called fatigue build-up. Fatigue or tiredness of students may be detrimental to the students' performance in a task; also this factor may interfere with the leaning processes (Schmidt, 1991). In both Groups 1 and 2 students were presented the same set of passages (three short passages) and were encouraged to answer the same number of comprehension questions after reading. The only difference between Group 1 and 2 was that in the former, students received all three passages and all comprehension questions at once during one massed session of 45 minutes, but in the latter, learners received the instruction during three sessions on three consecutive days. For Group 2, which is the distributed group, three sessions of 15 minutes were assigned with a rest time of 24 hours between each session. In each session, participants were given all three passages at once; however, the

comprehension questions were divided into three equal parts, each part given to them in one of those three sessions.

While these two different conditions did not make any differences in short-term acquisition of words, they were differentially effective in long-term receptive word acquisition. As mentioned, students' fatigue might be a very important factor in the less improvement of the massed group in relation to the distributed condition. Learners who engaged in the massed condition and answered all questions during one session might have faced the problem of fatigue build-up, which has detrimental effects on meaningful learning. In fact, fatigue might not negatively affect short-term learning, as the finding of the present research suggests but may negatively affect long-term learning of words. One possible explanation of this is that, as Schmidt (1991) stated, fatigue can interfere with the deeper cognitive processes of learning which are anticipated from the learners in long-term learning and makes these processes hard for them. Consequently, fatigue buildup had a more harmful effect on long-term learning than short-term learning of words. On the other hand, in the distributed group, fatigue has been minimized by increasing the rest time between the sessions (24 hours). In addition, although the time was kept constant for both groups, the frequency with which the words were presented to the students in the distributed group was higher than that of the massed group. The reason behind this is that, in the distributed group, learners read all passages three times, but in a shorter time, which increased the frequency of encountering each target word.

This finding is in line with some of the previous research on the effectiveness of massed and distributed practice. It is important to mention that the results obtained in previous studies are mixed in this regard; however, this study supports the positive effectiveness of distributed instruction.

Conclusion

The findings of the present study suggest that visual input enhancement is effective in the short-term and long-term receptive acquisition of vocabulary

items. The previous research studies on the area of visual input enhancement mainly examined its effectiveness for learning grammatical form; however, this study focuses on the acquisition of vocabulary items through visual input enhancement as an implicit, external attention drawing technique. Furthermore, based on the results of this study, it can be concluded that distributed instruction in which visual input-enhancement is utilized may lead to better learning of the words than the massed instruction. In other words, using implicit focus on form through distributed instruction has a positive long-term effect on receptive vocabulary acquisition.

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