



Massed Instruction vs. Spacing Instruction in Iranian Pre-Intermediate EFL Learners' Learning of English Prepositions

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Abstract: This study aimed to investigate the effects of using spacing and massed instructions on Iranian EFL learners' learning of English prepositions. To this end, 48 Iranian male participants were selected among 78 students based on the results of the Oxford Quick Placement Test (OQPT). The participants were randomly divided into two experimental groups of spacing and massed instructions. Then, both groups were pretested through a researcher-made prepositions test. After pre-testing, the prepositions of "in, on, at, from, about, and across" were taught to the experimental groups through spacing instruction and massed instruction. In the massed class, the mentioned prepositions were taught during five sixty-minute sessions while in the spacing class with the same number of sessions, each sixty-minute session was divided into three 20 minutes. Also, the massed class was held once a week while the spacing class was held three times a week. After the treatment, the results of the descriptive statistics as well as paired samples t-test and independent samples t-test indicated that the spacing group had better performance than the massed group on the post-test. Also, there was a significant difference between the post-tests of both groups in favor of the spacing group.
Keywords: EFL Learners, Spacing Instruction, Massed Instruction, Prepositions Learning.

Research Paper

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INTRODUCTION

The theory of the spacing instruction, first discussed in 1885 by Ebbinghaus (Ebbinghaus, 1885/1913), is that given a total constant study time, information is best learned and retained when reviewed in spaced intervals rather than in one uninterrupted study session. For remembering information, the spacing effect has been verified in a large number of learning domains, including mathematics (e.g., Rohrer & Taylor, 2006), L1 vocabulary acquisition among children (Childers & Tomasello, 2002), remembering physics facts and in memorizing pictures (e.g., Toppino, 1993). The spacing effect has also been demonstrated in text processing tasks (e.g., Seabrook, Brown, & Soly, 2005). Ellis (2006) speculates that spaced distribution learning of grammar items may be superior to massed distribution, noting, "it allows for the kind of gradual acquisition of grammar that is compatible with what is known about interlanguage development" (p. 92). In addition, spaced practice offers great potential for improving students'

educational outcomes (Kang, 2016). Furthermore, spaced practice promotes not only accurate recall of multiplication facts in children (Rea & Modigliani, 1985) but also faster retrieval of target responses (Rickard, Lau, & Pashler, 2008).

Besides spacing instruction, massed instruction is the other useful instruction in learning and teaching English which refers to teaching and learning in an intensive way. According to Willingham (2002), massed instruction refers to the studying/learning that takes place all at once over a long period of time.

For a long time, there has been ongoing debate regarding the influence of grammar in English language learning (Kumar, Kumar, & Sagar, 2015). In this vein, it is almost impossible to speak English accurately without using and applying proper grammar and as Canale and Swain (1980) state grammatical competence is a basic part of communicative competence and hence, one

cannot communicate effectively without having the knowledge of grammar.

Accordingly, one should have minimum idea on basic grammatical knowledge including verbs, tenses, articles, prepositions, etc. As a major component of grammar, some Iranian EFL learners confuse such prepositions as “in, on, and at” and use them interchangeably. In addition, one common characteristic of English prepositions is that they may offer many different meanings when used with the same word. Also, the meaning of the verb itself can change totally when followed by different prepositions. These characteristics are problematic for Iranian EFL learners and may hinder their learning process.

Considering the above issues, there is strikingly little research on the effects of spaced and massed instructions on foreign language learning in general, and on learning grammar and especially prepositions in particular. In fact, empirical studies which have specifically delved into the effect of spaced and massed instructions on grammar are few in number. Furthermore, even though it appears that the spacing effect has been well tested for second/foreign vocabulary learning, little research has been conducted to investigate its possible contribution to grammar learning, especially in the Iranian EFL context. In the same vein, with respects to grammar instruction and prepositions learning, the issue of massed vs. spaced distribution instruction has remained less touched and hence more studies should examine this issue. Therefore, this study tried to compare the effects of spaced and massed instructions on Iranian EFL learners’ grammatical knowledge of prepositions. In this vein, the following research questions were posed in this study:

1. Does spacing instruction have any significant effect on Iranian EFL learners’ preposition learning?
2. Does massed instruction have any significant effect on Iranian EFL learners’ preposition learning?
3. Is there any significant difference between Iranian EFL learners’ preposition learning through spacing instruction and massed instruction?

The primary aim of this study is to bridge the findings of previous psychological research to validate EFL classrooms in an attempt to make practical suggestions of how to implement spaced and/or massed practice in foreign grammar teaching. With the knowledge gained from this study, it will be possible for L2 educators, researchers, and curriculum planners to gain insight into how facilitate teaching English language grammar through using spacing instruction and massed instruction.

Review of Literature

Regarding the effects of massed and spaced instructions, several studies have been done. A significant number of studies in the memory research have demonstrated that spaced practice outweighs massed practice with regard to learning. These studies have demonstrated the positive effects of spacing in learning of words (e.g. Gerbier, Toppino, & Koenig, 2014; Küpper-Tetzel, Erdfelder, & Dickhäuser, 2014; Nakata, 2015), in learning of text passages, and in learning of L2 constructions (e.g. Matusevych, Alishahi, & Backus, 2016).

In a study by Bloom and Shuell (1981), 56 high school students’ learning of French studied 20 French–English word pairs under two different learning conditions (massed or spaced). In the massed group, students spent 30 consecutive minutes studying word pairs, whereas in the spaced group students spent 10 minutes a day for three consecutive days studying the word pairs. Furthermore, a retention test assessed students’ recall either immediately or 4 days after the final study session. The results of the delayed recall test showed that learning the word pairs in the spaced fashion led to better recall (35%) than learning the words in the massed fashion.

Bahrick *et al.*, (1993) indicated the power of the spacing effect over several years. In their research, respondents studied and restudied 300 English-foreign language word pairs. The training sessions comprised of either 13 or 26 learning or relearning sessions which were administered at intervals of 2, 4, or 8 weeks. After the training was completed, the participants recalled words at intervals of 1, 2, 3, or 5 years. The findings indicated that 13 relearning sessions separated by 8 weeks inter study gaps yielded recall comparable to 26 study sessions separated by 2 weeks.

Mammarella and Russo (2002) examined the spacing effect in recognition memory and in a frequency judgment task for unfamiliar target faces that were repeated in the same or in a different pose during incidental learning. Changing the pose between prime and probe trials reduced perceptual repetition priming in a structural discrimination task and also reduced the spacing effect in a subsequent unexpected recognition memory task. Three further experiments verified that the spacing effect in recognition memory (Experiments 2 and 4) or frequency judgment (Experiment 3) was reduced when the pose was changed between repeated presentations at study. Similarly, with non-words as targets (Experiment 5), changing the font between repeated occurrences of targets at study removed the spacing effect in a subsequent unexpected recognition memory test. These findings were interpreted to support the view that short-term perceptual repetition priming underlies the spacing effect in explicit cued memory tasks for unfamiliar nonsense material.

Year (2009) inspected the potential role of the spacing effect in foreign language grammar learning. To do this study, three groups of middle school students learning English in Korea were exposed to ditransitive verb structures based on massed or spaced distribution instruction, with the massed group receiving the input over a 4-day period and two spaced groups keeping a 4-week or 8-week schedule. The findings indicated that the spaced distribution learners significantly outperformed the massed distribution learners on the elicited production and acceptability judgment tests.

In a study which examined the impacts of explicit L2 grammar instruction via spaced distribution learning, Bird (2010) compared two groups of students having review sessions (form-focused instruction) under different spaced distribution schedules. The study gave one group of subjects five lessons on simple present vs. present perfect at 3-day intervals, and five separate lessons on present perfect vs. past perfect grammar at 14-day intervals. A separate group of students received the above treatment in reverse, having present perfect vs. past perfect grammar instruction at 3-day intervals and simple present vs. present perfect instruction at 14-day intervals. All study participants were tested (acceptability judgment) seven days after the final lesson, and no statistically significant differences were found on subject matter studied at 3-day intervals or 14-day intervals in both groups. However, on a delayed post-test given 60 days after the final study sessions, results of students who received the target grammar structures at 3-day intervals underwent steep declines in gains, while the results of material studied at 14-day intervals only experienced slight declines. This occurred for both groups of students. Although this study was technically not a comparison of massed versus spaced distribution, the findings revealed that having long as opposed to short breaks between review sessions can provide gains that are more resistant to forgetting.

In another research, Sobel, Cepeda, and Kapler (2011) had 39 middle-school children and studied 8 new English words during two sessions with a 1-week break between study sessions. The children learned the words under two different learning conditions (massed vs. spaced). In the massed condition, the two study sessions took place in immediate succession in session one. In the spaced condition, however, the two learning sessions were separated by a 1-week break in between study sessions. Thirty-five days after the second learning session, a cued recall test assessed children's performance. The results revealed that the recall for spaced items was vastly better than the recall for massed items. In the study by Goossens *et al.*, (2014), 48 elementary school children studied 15 unfamiliar words in the massed fashion and 15 other unfamiliar words in the spaced fashion. In the massed condition, the target words were divided into three sets of five words each and children practiced each set three times in one of three study sessions. In the spaced condition, the children

studied the words across three consecutive sessions during which the children studied the words once in each of the three study sessions. A retention test assessed children's recall 7 days and 35 days after the last study session. The findings indicated that children recalled the spaced words better than the massed words.

Miles (2014) carried out a quasi-experimental pre-test, post-test, delayed post-test study on the impact of spaced distribution instruction on the development of selected grammar items versus massed distribution instruction. Though the post-tests showed statistically equal gains on all test types for both experimental groups, the delayed post-test results showed the spaced distribution group outperformed the massed distribution group on one test type (error analysis and correction). Neither group outperformed the other on the delayed posttest results of a second test type (translation). However, there were far steeper rates of decline on gains from the post-tests to delayed post-tests for the massed distribution group on both tests, showing that gains made through spaced distribution instruction were more stable.

Nakata (2015) investigated whether the amount of spacing and retention interval may influence the effects of expanding and equal spacing on second language (L2) vocabulary learning. One hundred and twenty-eight Japanese college students studied 20 English-Japanese word pairs. The type of spacing (expanding and equal) as well as the amount of spacing (massed, short, medium, and long) were manipulated. Results demonstrated a limited, yet statistically significant, advantage of expanding spacing. The finding is significant because this is the first L2 study to find the superiority of expanding over equal spacing. The main effect of the amount of spacing was also significant, producing large effect sizes. Taken together, the outcomes recommended that expanding spacing may facilitate vocabulary learning although introducing spacing may have a larger effect.

More recently, Lotfolahi and Salehi (2017) used a new method to find out different schedules of spacing in young EFL learners. To this end, they taught young EFL learners English-Farsi word pairs applying different spacing schedules (massed vs. spaced). In the massed condition, students studied five-word pairs in session one and five-other word pairs one week later. In the spaced condition, the learners studied 10-word pairs in session one and restudied them one week later. To increase the benefits of spacing, the researchers incorporated tests (with corrective feedback) into different schedules of spacing. In other words, EFL learners were trained to test each other on their knowledge of the vocabulary and to give each other feedback. One week and five weeks later learners' recall was measured. The findings indicated that spaced practice produced better long-term retention than massed practice.

In another study, Mashhadi and Farvardin (2017) inspected the impacts of spaced and massed distribution instruction on EFL learners' recall and retention of grammatical structures. They selected 72 Iranian EFL junior high school students in a public school. The respondents were randomly divided into spaced distribution ($n = 24$), massed distribution ($n = 23$), and control ($n = 25$) groups. The massed group had one intensive session on learning the target grammatical structures (i.e., the simple present affirmative, negative, and interrogative forms); the spaced distribution group had three sessions at irregular time intervals; while the control group received no instruction. To gather data on the recall and retention of the target structures, an error correction test was given to the participants three times as the pretest, immediate posttest and delayed posttest. The findings of the repeated measures mixed ANOVAs, one-way ANOVAs, and post hoc Tukey tests showed that the spaced distribution group significantly did better than the other two groups on the delayed posttest. However, there was not a significant difference between the spaced and massed distribution groups on the immediate post-test.

Namaziandoost, Rahimi Esfahani, and Hashemifardnia (2018) compared the effects of spacing and massed instructions on Iranian EFL learners' reading comprehension. To fulfil this objective, 50 Iranian participants were selected among 80 students based on the results of Oxford Quick Placement Test (OQPT). The intermediate selected participants were then randomly divided into two equal experimental groups; spacing group and massed group. Afterwards, the researcher measured the participants' English reading comprehension by administering a reading comprehension pre-test. Then, five English texts from Active One Book were instructed to the both experimental groups. In the massed class, each text was taught in an intensive 60-minute session, while each text was taught to the spaced group in three short sessions (about 60 minutes. total). The first session lasted for 20 minutes; while the second occurring two days after the initial session (lasted 20 minutes); and the third session took 20 minutes and was held two days after the second session. After the instruction, a reading post-test was administered to the both groups and finally the data were analyzed by using paired and independent samples t-tests. The obtained results indicated that there was a significant difference between the post-tests of spacing and massed groups. The findings indicated that the spacing group significantly outperformed the massed group ($p < .05$) on the post-test. The implications of this study can make the teachers aware that teaching through spaced intervals can provide better results than teaching through one massed session.

Based on the literature reviewed above, despite the importance of spaced and massed instructions, they have not yet received the attention they deserve. In fact, only a few studies have examined the effectiveness of

using spaced and massed instructions in Iranian EFL context. Therefore, this study aimed to compare the impacts of spaced and massed instructions on Iranian EFL learners' preposition learning.

METHODOLOGY

This quasi-experimental study employed a pre-test and post-test, control group, experimental design focusing on the variables of massed instruction and spacing instruction as independent variables and grammatical learning (prepositions) as the dependent variable.

Participants

The sample of the study consisted of 48 Iranian male participants between the ages of 14 and 16 years who were selected from among 75 students from two English language institutes in Shiraz, Iran. All participants were native speakers of Persian who were at pre-intermediate level of proficiency in English based on the results of Oxford Quick Placement Test (OQPT). The sample of the study was selected through non-random sampling method since only those students whose scores were between 30 and 40 (pre-intermediate level) were included in this study. The sample was randomly divided into two experimental groups of spacing instruction and massed instruction. Thus, there were 24 participants in each group.

Instruments

To collect the required data, the following instruments were utilized:

- Oxford Quick Placement Test (OQPT): It was used to determine the participants' homogeneity regarding their proficiency (Appendix A) and to have a greater understanding of what level the participants were at. Accordingly, the learners whose scores were between 30 and 40 (out of 60) were considered as the pre-intermediate learners.
- Researcher-made preposition pre-test: It was prepared based on the students' course book and consisted of 20 multiple choice items (Appendix B). The pre-test was validated by a panel of English experts and its reliability was calculated through using KR-21 formula ($r=0.836$). Also, a pre-test was piloted on another group whose characteristics (language proficiency, age, gender) were the same as the target group to check the feasibility of the test that was going to be administered to the target population.
- Researcher-made post-test: It consisted of 20 multiple choice items (Appendix C). In fact, the post-test was a modified version of the pretest of the study with some slight differences in which the order of the options and questions were changed to avoid reminding the pre-test answers. Since the items used in the post-test

were adapted from the similar pre-test, it was regarded to be both reliable and valid.

Data Collection Procedure

After making the participants homogenous, their proficiency level of English grammar (preposition) knowledge was measured by a grammar pre-test. Afterwards, the students in the experimental groups received the same treatment but in different ways. The new grammatical points (prepositions) were taught to the experimental groups through spacing instruction and massed instruction. In the massed class, the grammar structures were taught during 60 minutes to the students. In fact, 60 minutes were allocated to each session. In the spacing class, 60 minutes were divided into three 20 minutes and each session lasted 20 minutes. The spacing class was held three times a week while the massed class was held once a week.

In the treatment phase of the study, the massed instruction group was taught the target grammar in an intensive 60-minute session, while the spacing instruction group was taught in three short sessions (totally, 60 minutes). The first session lasted for 20 minutes; the second session was held two days after the initial session and lasted 20 minutes; and the third session was held two days after the second session and

took 20 minutes as well. The whole instruction lasted eight sessions. In the first and the second sessions, the OQPT and pre-test were administered, respectively. The grammatical points including prepositions (in, on, at, from, about, and across) were taught during five sessions, and the grammar post-test was given to the participants of both groups in the last session to measure the effects of the treatment on their learning of prepositions.

Data Analysis Procedure

The data collected were analyzed through using Statistical Package for Social Sciences (SPSS) software, version 22. In order to check the data normality, the Kolmogorov-Smirnov (K-S) test was run. After that, independent samples and paired samples t-tests were used to assess the effects of the treatment on the learning of prepositions.

RESULTS

Both descriptive statistics and inferential statistics were utilized to analyze the data. Initially, the Kolmogorov-Smirnov test was used to check the normality of the pre and post-tests scores. The details are presented in Table 1.

Table 1: One-Sample Kolmogorov-Smirnov Test to Check the Normality of the Pre and Post-tests Scores in the Groups

N		massedpre	spacedpre	massedpost	spacedpost
		24	24	24	24
Normal Parameters ^{a,b}	Mean	14.3750	14.1667	15.0000	18.4167
	Std. Deviation	1.73988	1.85722	1.95604	1.34864
Most Extreme Differences	Absolute	.327	.318	.237	.255
	Positive	.327	.318	.237	.246
	Negative	-.215	-.182	-.153	-.255
Kolmogorov-Smirnov Z		1.602	1.560	1.161	1.248
Asymp. Sig. (2-tailed)		.512	.415	.145	.089
a. Test distribution is Normal.					
b. Calculated from data.					

Table 1 shows that Sig. (2-tailed) (.512, .415, .145, & .089) is greater than .050, therefore the scores are normally distributed. Thus, the parametric statistics of independent samples t-test and paired samples t-test were

used to get the final results. In this vein, the researcher used both descriptive and inferential statistics to obtain the necessary results. In Table 2, the descriptive statistics of both groups in the pre-test are presented.

Table 2: The Descriptive Statistics of Both Groups in the Pre-test

	N	Mean	Std. Deviation	Std. Error Mean
mass	24	14.3750	1.73988	.35515
spaced	24	14.1667	1.85722	.37910

As shown in Table 2, the mean scores of both groups are almost equal. The massed group's mean score is 14.37 and the spaced group's mean score is 14.16. Also, both groups were at the same level of grammar

before receiving the treatment. To see if the difference between the pre-test of both groups was significant or not, an independent samples t-test was used. The results are presented in Table 3.

Table 3: Independent Samples T-test of Both Groups to Show Significant Difference in the Pre-test

		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
s	Equal variances assumed	.106	.747	.401	46	.690	.20833	.51947	-83731	1.25398
	Equal variances not assumed			.401	45.805	.690	.20833	.51947	-83743	1.25410

As shown in Table 3, Sig is (.690) and since Sig is greater than 0.05, the difference between the groups is not significant at ($p < 0.05$). In other words, they

performed the same on the pre-test. Also, both control and experimental groups were at the same level of grammar before applying the instruction.

Table 4: The Descriptive Statistics of Both groups in the Post-test

	N	Mean	Std. Deviation	Std. Error Mean
mass	24	15.0000	1.95604	.39927
spaced	24	18.4167	1.34864	.27529

Table 4 reveals that the mean scores of the groups are different. The massed group's mean score is 15.00 and the spaced group's mean score is 18.41. This means that the spaced group outperformed the massed

group. To ascertain if the difference between the post-test of both groups was significant or not, an independent samples t-test used. The results are presented in Table 5.

Table 5: Independent Samples T-test of Both Groups to Show Significant Difference in the Post-test

		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
s	Equal variances assumed	4.322	.043	-7.045	46	.000	-3.41667	.48498	-4.39288	-2.44045
	Equal variances not assumed			-7.045	40.837	.000	-3.41667	.48498	-4.39622	-2.43711

Table 5 indicates that the difference between the both groups is significant at ($p < 0.05$). It also shows that Sig is .000 which is less than .050, so we can say that the difference between the post-tests of the groups is significant in favor of the spaced group. In fact, the

spaced instruction group outperformed the massed instruction group in the post-test. In Table 6, paired samples descriptive statistics of both groups for pre and post-tests are presented.

Table 6: Paired Samples Descriptive Statistics of Both Groups for Pre and Post-tests

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	massedpre	14.3750	24	1.73988	.35515
	massedpost	15.0000	24	1.95604	.39927
Pair 2	spacedpre	14.1667	24	1.85722	.37910
	spacedpost	18.4167	24	1.34864	.27529

Based on the descriptive statistics in Table 6, the mean scores of the massed group on the pre and post-tests are 14.37 and 15.00, respectively. Also, the spaced groups' mean scores on the pre and post-tests are 14.16

and 18.41, respectively. To see if the difference between the pre and post-tests of each group is significant or not, a paired samples t-test was used. The results are presented in Table 7.

Table 7: Paired Samples T-test of Both Groups to Show Significant Difference in the Pre and Post-tests of each group

	Paired Differences				t	df	Sig. (2-tailed)	
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower				Upper
Massedpre – Massedpost	-.62500	.49454	.10095	-.83382	-.41618	-6.191	23	.000
Spacedpre Spacedpost	-4.25000	1.82376	.37227	-5.02010	-3.47990	-11.416	23	.000

As indicated in Table 7, since Sig (.000) is less than 0.05, the difference between the post-test and pre-test of the massed group is significant. Similarly, since Sig (.000) is less than 0.05, the difference between the post-test and pre-test of the spaced group is significant. It can be concluded that even though both instructions were effective, the spaced instruction was more effective than the massed one.

DISCUSSION AND CONCLUSION

Regarding the first research question, the results indicated that the spacing group improved on their post-test compared to their pre-test. Their scores on the post-test were very better than their scores on the pre-test. This improvement may be the results of spacing instruction.

The findings of this study are in line with Year (2009) who examined the potential role of the spacing effect in foreign language grammar learning. To do his study, three groups of middle school students learning English in Korea were exposed to ditransitive verb structures based on massed or spaced distribution instruction, with the massed group receiving the input over a 4-day period and two spaced groups keeping a 4-week or 8-week schedule. The results showed that the spaced distribution learners significantly outperformed the massed distribution learners on the elicited production and acceptability judgment tests.

In the current study, spacing instruction helped Iranian EFL students to improve their preposition knowledge. In spacing instruction students had more time to rest, had more time to think, and had more time to study; this may lead to the students' preposition development. We can say that when students learn something in spacing sessions they can remind it better.

The results of this study are supported by Bird (2010) who investigated the effects of explicit L2 grammar instruction via spaced distribution learning. The study gave one group of subjects five lessons on simple present vs. present perfect at 3-day intervals, and five separate lessons on present perfect vs. past perfect grammar at 14-day intervals. A separate group of students received the above treatment in reverse, having present perfect vs. past perfect grammar instruction at 3-day intervals and simple present vs. present perfect

instruction at 14-day intervals. This study revealed that spaced distribution had better performance than the massed group.

The findings of this study are in contrast with Rawson and Kintsch (2005) who proved that massed practice was more effective than spaced practice for rereading of text passages. Some studies revealed that, when measured merely on immediate posttests, massed (i.e., intensive) distribution instruction appeared superior to spaced distribution instruction (Collins & White, 2011; Serrano, 2011; Serrano & Munoz, 2007).

Regarding the second research question, the findings showed that the massed group improved on their post-test compared to their pre-test. Their scores on the pre-test and post-test were almost different. So, the second null hypothesis of the study "Massed instruction does not have any significant effect on Iranian EFL learners' preposition learning" is rejected.

The results of the current study are not compatible with Sobel, Cepeda, and Kapler (2011) who had 39 middle-school children and studied 8 new English words during two sessions with a 1-week break between study sessions. The children learned the words under two different learning conditions (massed vs. spaced). The results revealed that the recall for spaced items was vastly better than the recall for massed items.

The findings of this study (regarding the second question) are not in line with Lotfolahi and Salehi (2017) who used a new method to find out different schedules of spacing in young EFL learners. To this end, they taught young EFL learners English-Farsi word pairs applying different spacing schedules (massed vs. spaced). In the massed condition, students studied five-word pairs in session one and five-other word pairs one week later. In the spaced condition, the learners studied 10-word pairs in session one and restudied them one week later. To increase the benefits of spacing, the researchers incorporated tests (with corrective feedback) into different schedules of spacing. In other words, EFL learners were trained to test each other on their knowledge of the vocabulary and to give each other feedback. One week and five weeks later learners' recall was measured. The findings revealed that spaced practice

produced better long-term retention than massed practice.

The findings of this study (regarding the second question) are in opposite of Miles (2014) who carried out a quasi-experimental pre-test, post-test, delayed post-test study on the impact of spaced distribution instruction on the development of selected grammar items versus massed distribution instruction. Though the post-tests showed statistically equal gains on all test types for both experimental groups, the delayed post-test results showed the spaced distribution group outperformed the massed distribution group on one test type (error analysis and correction).

Regarding the third research question, the results of paired samples t-tests indicated that both spacing and massed instructions improved preposition learning of Iranian EFL learners. Indeed, both groups had better performances on their post-tests. Though massed instruction helped EFL learners improve their grammar learning it was not as effective as spacing instruction. There was a significant difference between the post-tests of spacing and massed instructions in favor of spacing instruction. Consequently, the third null hypothesis of the study "There is not any significant difference between Iranian EFL learners' preposition learning through spacing and massed instructions" is rejected.

Spacing instruction assisted Iranian EFL learners to enhance their preposition knowledge. In spacing instruction learners had more time to rest, had more time to think, and had more time to review the materials; so the grammar improvement of the participants can be attributed to the mentioned features of spacing instruction. The results of this research are supported by Namaziandoost, Rahimi Esfahani, and Hashemifardnia (2018) who compared the effects of spacing and massed instructions on Iranian EFL learners' reading comprehension. The obtained results indicated that there was a significant difference between the post-tests of spacing and massed groups. The findings indicated that the spacing group significantly outperformed the massed group ($p < .05$) on the post-test. The implications of this study can make the teachers aware that teaching through spaced intervals can provide better results than teaching through one massed session.

The findings of the current study reveal that spacing instruction enhanced Iranian EFL learners' grammar learning. Studying information across two or more sessions that are separated (i.e., spaced apart or distributed) in time often produces better learning than spending the same amount of time studying the material in a single session.

The findings are compatible with previous studies in cognitive psychology (Seabrook *et al.*, 2005) which confirmed the positive effect of spaced distribution instruction on different domains of learning.

Research has shown that information is retained far longer when instruction and reviews of learned content are given in spaced intervals (spaced distribution) rather than during one uninterrupted session (massed distribution) (Miles, 2014). Moreover, the findings are in line with some previous studies (e.g., Miles, 2014; Miles & Kwon, 2008) showing that the spaced distribution instruction improved foreign language learning.

CONCLUSION

The findings of the current study indicated that both types of instruction improved the performances of the participants on the post-test but spacing instruction was more effective than the massed one. Accordingly, the results of this study confirm the claim by Miles (2014) that learning through spacing instruction provides the learners with a better opportunity to retain a sufficient amount of knowledge gained from instruction until the next opportunity for review arises, either accidentally through input, explicitly through additional instruction, or through the need to use the specific item in speaking, reading, or writing.

The findings of this study can open new avenues to the future researchers who want to work on the domain of spacing instruction and massed instruction. In this vein, the findings can be of valuable help to learners, teachers, and curriculum developers in different ways. Learners can space their self-study sessions out in time to enhance the amount of their learning. It could be a good idea for teachers to schedule classroom learning activities according to a spaced schedule to increase learners' performance at the tests. Also, it will help syllabus designers and curriculum developers through which they will be able to plan the course books to facilitate foreign language learning.

Perhaps the most practical benefit of learning grammar through spaced distribution is that it gives the student a better chance to retain a sufficient amount of knowledge gained from instruction until the next opportunity for review arises, either incidentally through input, explicitly through further instruction, or through the need to use the particular item in speaking or writing. The spacing effect may also be effective for developing complex skills beyond rote memorization.

This study can bring about some pedagogical implications for the researchers, students and teachers. The findings can help English teachers whether to use spacing instruction or massed instruction. Meanwhile, this study can provide insights for teachers to stop using only one method in the classrooms; they help the teachers to apply both spacing instruction and massed instruction in their classrooms. The findings of the present study suggest that the English learners should consciously use spaced instruction to manage their performance and to maintain their learning,

This study suffers from some limitations. The participants of the current study were 48 students at pre-intermediate level whose course of instruction lasted eight sessions. Also, the study was limited to Iranian EFL context, which can be conducted in other EFL and ESL contexts so that the results may be generalizable to other levels and contexts. Another limitation is that the study included only male participants who were 14 and 16 years old and hence, the results cannot be generalized to the other age and gender groups.

The sampling method used in this study was based on the availability of the participants. Similar studies with a more representative sample can provide more generalizable results. Also, further studies are recommended to inspect the impact of massed and

spaced instructions on other skills and sub-skills of English language. Still again, other forms of grammar (rather than prepositions) should be studied to realize if spaced and massed instructions can be consistently effective. Moreover, future studies are offered to work on other language proficiency levels- elementary, upper-intermediate and advanced. In addition, the following studies are suggested to carry out similar topics in other geographical locations. Finally, it is suggested to use interviews in the upcoming studies to examine the attitudes and ideas of both EFL teachers and learners about spacing instruction and massed instruction.

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Appendix (A): Oxford Quick Placement Test

Oxford University Press and University of Cambridge Local Examinations Syndicate

Name:
Date:

Version 1

This test is divided into two parts:

Part One (Questions 1 – 40)

Part Two (Questions 41 – 60)

Do not start this part unless told to do so by your test supervisor.

Time: 30 minutes

Part 1

Questions 1 – 5

Where can you see these notices?

For questions 1 to 5, mark one letter A, B or C on your Answer Sheet.

1.	Please leave your room key at Reception	A. in a shop B. in a hotel C. in a taxi
2.	Foreign money changed here	A. in a library B. in a bank C. in a police station
3.	AFTERNOON SHOW BEGINS AT 2PM	A. outside a theatre B. outside a supermarket C. outside a restaurant
4.	CLOSED FOR HOLIDAYS Lessons start again on the 8th January	A. at a travel agent's B. at a music school C. at a restaurant
5.	A. at a cinema B. in a hotel C. on a camp-site	

Questions 6 – 10

- In this section you must choose the word which best fits each space in the text below.
- For questions 6 to 10, mark **one** letter **A, B** or **C** on your Answer Sheet.

Scotland

Scotland is the north part of the island of Great Britain. The Atlantic Ocean is on the west and the North Sea on the east. Some people (6) Scotland speak a different language called Gaelic.

There are (7) five million people in Scotland, and Edinburgh is (8) most famous city. Scotland has many mountains; the highest one is called 'Ben Nevis'. In the south of Scotland, there are a lot of sheep. A long time ago, there (9) many forests, but now there are only a (10) Scotland is only a small country, but it is quite beautiful.

6. A. on B. in C. at
 7. A. about B. between C. among
 8. A. his B. your C. its
 9. A. is B. were C. was
 10. A. few B. little C. lot

Questions 11 – 20

- In this section you must choose the word which best fits each space in the texts.
- For questions 11 to 20, mark **one** letter A, B, C or D on your Answer Sheet.

Alice Guy Blaché

Alice Guy Blaché was the first female film director. She first became involved in cinema whilst working for the Gaumont Film Company in the late 1890s. This was a period of great change in the cinema and Alice was the first to use many new inventions, (11) sound and color.

In 1907 Alice (12) to New York where she started her own film company. She was (13) successful, but, when Hollywood became the centre of the film world, the best days of the independent New York film companies were (14) When Alice died in 1968, hardly anybody (15) her name.

11. A. bringing B. including C. containing D. supporting
 12. A. moved B. ran C. entered D. transported
 13. A. next B. once C. immediately D. recently
 14. A. After B. down C. behind D. over
 15. A. remembered B. realized C. reminded D. repeated

UFOs – do they exist?

UFO is short for 'unidentified flying object'. UFOs are popularly known as flying saucers, (16)that is often the (17)they are reported to be. The (18) "flying saucers" were seen in 1947 by an American pilot, but experts who studied his claim decided it had been a trick of the light.

Even people experienced at watching the sky, (19)as pilots, report seeing UFOs. In 1978 a pilot reported a collection of UFOs off the coast of New Zealand. A television (20)went up with the pilot and filmed the UFOs. Scientists studying this phenomenon later discovered that in this case they were simply lights on boats out fishing.

16.	A. because	B. therefore	C. although	D. so
17.	A. look	B. shape	C. size	D. type
18.	A. last	B. next	C. first	D. oldest
19.	A. like	B. that	C. so	D. such
20.	A. cameraman	B. director	C. actor	D. announcer

Questions 21 – 40

- In this section you must choose the word or phrase which best completes each sentence.
- For questions 21 to 40, mark **one** letter A, B, C or D on your Answer Sheet.

21. The teacher encouraged her studentsto an English pen-friend.

- A. should write C. wrote
 B. write D. to write

22. They spent a lot of timeat the pictures in the museum.

- A. looking C. to look
 B. for looking D. to looking

23. Shirley enjoys science lessons, but all her experiments seem towrong.

- A. turn C. end
 B. come D. go

24.from Michael, all the group arrived on time.

- A. Except C. Besides
 B. Other D. Apart

25. Sheher neighbor's children for the broken window.

- A. accused C. blamed
 B. complained D. denied

26. As I had missed the history lesson, my friend wentthe homework with me.

- A. by C. over
 B. after D. on

27. Whether she's a good actress or not is a of opinion.
A. matter C. point
B. subject D. case
28. The decorated roof of the ancient palace wasup by four thin columns.
A. built C. held
B. carried D. supported
29. Would ityou if we came on Thursday?
A. agree C. like
B. suit D. fit
30. This formbe handed in until the end of the week.
A. doesn't need C. needn't
B. doesn't have D. hasn't got
31. If you make a mistake when you are writing, just it out with your pen.
A. cross C. do
B. clear D. wipe
32. Although our opinions on many things, we're good friends.
A. differ C. disagree
B. oppose D. divide
33. This product must be eatentwo days of purchase.
A. by C. within
B. before D. under
34. The newspaper report containedimportant information.
A. many C. an
B. another D. a lot of
35. Have you consideredto London?
A. move C. to be moving
B. to move D. moving
36. It can be a good idea for people who lead an active life to increase theirof vitamins.
A. upturn C. upkeep
B. input D. intake
37. I thought there was a of jealousy in his reaction to my good fortune.
A. piece C. shadow
B. part D. touch
38. Why didn't you that you were feeling ill?
A. advise C. remark
B. mention D. tell
39. James was not sure exactly where his best interests
A. stood C. lay
B. rested D. centered
40. He's still gettingthe shock of losing his job.
A. across C. over
B. by D. through

Part 2

Do not start this part unless told to do so by your test supervisor.

Questions 41 – 50

- In this section you must choose the word or phrase which best fits each space in the texts.
- For questions 41 to 50, mark one letter A, B, C or D on your Answer Sheet.

The tallest buildings – SKYSCRAPERS

Nowadays, skyscrapers can be found in most major cities of the world. A building which was many (41) high was first called a skyscraper in the United States at the end of the 19th century, and New York has perhaps the (42) skyscraper of them all, the Empire State Building. The (43) beneath the streets of New York is rock, (44) enough to take the heaviest load without sinking, and is therefore well-suited to bearing the (45) of tall buildings.

41. A. stages B. steps C. stories D. levels
42. A. first-rate B. top-class C. well-built D. best-known
43. A. dirt B. field C. ground D. soil
44. A. hard B. stiff C. forceful D. powerful
45. A. weight B. height C. size D. scale

SCRABBLE

Scrabble is the world's most popular word game. For its origins, we have to go back to the 1930s in the USA, when Alfred

Butts, an architect, found himself out of (46) He decided that there was a (47) for a board game based on words and (48) to design one. Eventually he made a (49) from it, in spite of the fact that his original (50) was only three cents a game.

46.	A. earning	B. work	C. income	D. job
47.	A. market	B. purchase	C. commerce	D. sale
48.	A. took up	B. set out	C. made for	D. got round
49.	A. wealth	B. fund	C. cash	D. fortune
50.	A. receipt	B. benefit	C. profit	D. allowance

Questions 51 – 60

- In this section you must choose the word or phrase which best completes each sentence.
- For questions 51 to 60, mark **one** letter **A, B, C** or **D** on your Answer Sheet.
- 51. Roger’s manager to make him stay late if he hadn’t finished the work.
A. insisted C. threatened
B. warned D. announced
- 52. By the time he has finished his week’s work, John has hardly energy left for the weekend.
A. any C. no
B. much D. same
- 53. As the gameto a close, disappointed spectators started to leave.
A. led C. approached
B. neared D. drew
- 54. I don’t rememberthe front door when I left home this morning.
A. to lock C. locked
B. locking D. to have locked
- 55. Ito other people borrowing my books: they always forget to return them.
A. disagree C. dislike
B. avoid D. object
- 56. Andrew’s attempts to get into the swimming team have notwith much success.
A. associated C. joined
B. concluded D. met
- 57. Although Harry had obviously read the newspaper article carefully, he didn’t seem to have..... the main point.
A. grasped C. clasped
B. clutched D. gripped
- 58. A lot of the views put forward in the documentary were open to
A. enquiry C. question
B. query D. wonder
- 59. The new collegefor the needs of students with a variety of learning backgrounds.
A. deals C. furnishes
B. supplies D. caters
- 60. I find the times of English meals very strange – I’m not used dinner at 6pm.
A. to have C. having
B. to having D. have

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