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Abstract

Admittedly, as opposed to simple writing treatments, massed or spaced instructions, more or less, seem to add variety and attractiveness to writing accomplishment. The current attempt concerned the efficacy of putting in service the two above-mentioned distribution instructions on EFL learners' writing performance. To conclude, 40 upper-intermediate learners (19 to 23 years) of both gender enjoyed 8 sessions in an institute in Ilam, Iran. They were randomly divided into two groups of massed and spaced each group consisting of 20. Instruments utilized were a Quick Oxford Placement Test, a writing pre-test, and a writing post-test. One group was disciplined paragraph writing with massed and spaced instruction with accuracy, complexity and fluency in focus. The researchers taught each session in an intensive 60 minutes' session to massed groups, whereas the similar session was taught to the spaced groups in three 20-minute short sessions at irregular time intervals. Subjects were retested after 8 weeks. Lastly, a posttest of writing was carried out for all groups. The results of the paired samples t-test and One-way ANCOVA denoted that the spaced distribution group significantly outperformed the massed distribution group on the posttest in their final post-test.

Keywords: Spaced Distribution Instruction, Massed Instruction, writing, upper-intermediate EFL learners.

Introduction

There is indeed a vital need to acknowledge and test teaching strategies which can be conducive in increasing students' long term knowledge. As curriculum modifications strive to include effective strategies, solid evidence from actual classrooms is needed to convince teachers

of techniques so that they boost educational settings. To address the practical concerns of educators, massed and spaced practice were adopted for the current study to be dealt with. The chief objective was measuring writing performance of Iranian EFL learners through massed and spacing instructions. In total, it is thought that second language achievement could be explained through features of complexity, accuracy and fluency (CAF) (Ellis, 2008; Freeman, 2009). These concepts have been highlighted in investigating learners' language performance, both in oral and written forms. The current description was to consider if the massed versus spacing instruction affects the quality of written performance by EFL learners in terms of complexity, accuracy, and fluency. Ahmadi and Alavi Zahed (2017) argue that measures of grammatical accuracy, complexity, along with vocabulary, pronunciation, and fluency guide in discriminating the proficiency levels of learners. A combination of these features, particularly accuracy, fluency and complexity, determines the overall proficiency of learners. The learners with higher proficiency involve more constructively demonstrating a range of various language functions. Ahmadi and Alavi Zahed add that considering each measure of CAF may lead to divergent influences. When one pays attention to accuracy, s/he will present slower and less complex production; however, it enables them to speak confidently. When one deals with, he will produce novel structures, but more errors in production. When he pays attention to fluency, he will focus less on accuracy and complexity. Furthermore, the measures are helpful in the sense that development in any one of these dimensions of proficiency might relies upon the development of another.

Accuracy is the most easily defined of the triad since there is more consensus in the aim, which is matching the target language. Housen and Kuiken (2009) define accuracy simply as "error-free" oral or written utterances. Accuracy is measured by self-repair attempts or as a function of errors produced. Self-repair has been measured as a percentage of self-repairs or as a ratio of self-repairs to errors (Michel, Kuiken, & Vedder, 2007). Complexity has been described as "elaborated language" (Ellis & Barkhuizen, 2005, p. 139). The complexity of utterances has been the most difficult to define and this component of language performance is most easily conflated with language development or progress. Language complexity can be considered a function of sophistication or variety, or a function of syntactic or grammatical complexity (Norris & Ortega, 2009). Fluency is commonly used in a broad sense, similar to second language proficiency, such as "She's fluent in French" (Koponen & Riggenbach, 2000). When analyzed into

subcomponents, fluency has been illustrated in terms of repair, speed, breakdown of fluency, and automatization (Skehan, 2009b).

The development of language skills is important at both the individual and social levels. Writing, which is one of these skills, enables learners to express themselves both aesthetically and permanently. This importance of writing requires solitary attention to the training for its development. Each individual's interest, wishes and attitudes towards the writing skill, which is very considerable for individuals' mutual communication and social life, is not the same. Certain variables, such as education received, family environment, and personal characteristics are effective in the emergence of this difference related to writing (Göçer, 2014a). Writing skill is significant from two aspects, namely as writer-based and reader-based (Göçer, 2014). Writing needs to be acquired and developed by an individual; for the writer, in terms of sharing what appears in his mind following the things he has read, observed and experienced; and for the reader, in terms of being nourished, having his imagination shaped, and having his life philosophy formed by what he has read. Alsamdani (2010) has also stated that "writing is a challenging process as it involves various skills of thesis statement, writing supporting details, reviewing and editing" (p. 55).

As mentioned the aim behind this study was measuring writing performance of Iranian EFL learners through massed and spacing instructions. With spaced learning, learners practice an activity at regular intervals over a long period of time. However, with massed practice, they practice an activity numerous times with practically no breaks. Cramming is an example of massed practice. Spaced practice, also known as distributed learning or spaced repetition, helps students learn better. Specifically, it helps them to retain information for longer periods of time compared to sessions during which learning is "massed", commonly known as cramming. Students may learn to appreciate the benefits of spacing more quickly and adapt their own study strategies accordingly when such instruction, experience, and feedback are given to them in the context of impacting their grades (Toppino and Cohen, 2010).

Significance of the Study

Writing is not only important in communication, it is also an effective way in many fields of expression, judgment of a person, flexibility and maturity. Mourtaga (2004) said that writing is the vital means of communication within an organization. He also explained that writing is a critical way of communication which is a necessary component of education, livelihood and basic functioning in our society. Writing is how much of the world communicates. If the person does not write well, s/he will be cut off from a large community. Writing helps the writer be more flexible and mature. The more he or she writes, the more flexible his/her vision and thought process become towards the requirements and demands of the reader. It assists the learner with other language tasks as well. It helps him learn how to form language, how to spell, how to put together a plot. With effective writing skills, your message can be understood by your peers in a better way. Writing clear messages makes it easier for others to understand your ideas and thoughts.

Research Question and Null Hypothesis

This study tried to answer the following two research questions:

RQ 1. Does spacing instruction have any significant effect on Iranian EFL learners' collocation learning?

RQ 2. Does massed instruction have any significant effect on Iranian EFL learners' collocation learning?

Based on the abovementioned question, the following null hypothesis was formulated in this study:

Null Hypothesis: There is not any significant difference between Iranian EFL learners' writing performance through spacing instruction and massed instruction.

Literature Review

The words massed and distributed practice are derived from cognitive psycho-logy and used to explain situations in which training time is concentrated or distributed over a period of time. Miles (2014) believed that the spacing effect may also be beneficial for expanding intricate skills beyond rote memorization. Lotfolahi and Salehi (2017) used a technique to research different calendars of spacing in youthful English as a foreign language (EFL) students. To this end, they taught youthful EFL students English–Farsi word sets applying different dispersing plans (massed vs. spaced). In the massed condition, students contemplated five-word matches in Session one1 and five other-word sets multiple weeks later. In the spaced condition, the students contemplated 10-word matches in Session 1 and restudied them multiple weeks later. To expand the advantages of spacing, the analysts fused tests (with restorative input) into various timetables of dividing. At the end of the day, EFL students were prepared to inspect each other on their insight into the vocabulary and to give each other input. Multi-week and after 5 weeks students' reviews were estimated. The discoveries demonstrated that dispersed practice delivered superlative long-term retention than massed rehearse.

In another study, Mashhadi and Farvardin (2017) investigated the impacts of using spaced and massed distribution instructions on EFL learners' recall and retention of grammatical structures. To do this study, the researchers chose 72 Iranian EFL junior high school students in a public school. The participants were randomly assigned to 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 collect the needed data on the recall and retention of the target structures, an error correction test was administered to the subjects 3 times as the pretest, immediate posttest, and delayed posttest. The consequences of the repeated measures mixed ANOVAs, one-way ANOVAs, and post hoc Tukey tests revealed that the spaced distribution group noticeably outperformed 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 posttest.

The great benefits of using the spacing effect for complex numerical skill movement have been declared by Rohrer and Taylor (2006). Moulton et al. (2006) confirmed that training a particular medical procedure strategy through spaced intervals outperformed the results of training through an extensive circulatory training session, as shown in a month delayed post-test (Miles, 2014). A majority of studies have demonstrated the beneficial impacts of spaced instruction over massed instruction in grammar learning (Miles, 2014), vocabulary learning (Nakata, 2015).

Method

Research Model

An experimental design, one of the quantitative research methods, was utilized in the current description. In this experimental design, the process was designed according to the “pretest/posttest model with control group”. In the study, with the purpose of comparing massed versus spacing instruction on learners' writing, accuracy, fluency and complexity scales were taken into account. At the same time, to determine their levels in relation to writing, learners were asked to write texts related to the subjects given. A period of one lesson hour was given to each group for each application. Eight session experimental application process was begun with the students in the spacing group based on the spacing writing instruction activities and massed group with intense time. On completion of the process, posttests were applied to both the groups.

Participants

To do this research, 40 participants were selected among 80 Iranian students based on the results of Oxford Quick Placement Test (OQPT). The English proficiency level of the participants was intermediate. The participants were of both gender and native speakers of Persian. The target participants were randomly divided into two equal experimental groups; spacing instruction and massed instruction.

Instruments

The first instrument, which was used in the current investigation was the OQPT. This test was employed to homogenize the sample members. It could help the researchers have a greater understanding of what level (i.e., elementary, pre-intermediate, intermediate) their participants

were at. Based on the findings of this test, 40 students whose scores were between 40 and 47 were considered as the upper-intermediate level, and they were chosen as the target participants of the present report.

The second instrument of study was a writing pretest. To realize the participants' writing level, a researcher-made pretest was designed based on the students' course book (paragraph writing). It consisted of 20 subjective items including writing tasks. The validity of the pretest was confirmed by a panel of English experts and its reliability was computed through using KR-21 formula ($r = .834$). The researcher piloted the pretest on another similar group so as to check the feasibility of the test that was going to be held to the target participants.

The third instrument of the current study was a writing posttest. The posttest was the modified version of the pretest but there was a slight difference between pre-and posttests, that is, the questions level was changed to harder ones considering their accuracy, complexity and fluency.

Data Collection Procedure

After making the participants homogeneous, their proficiency level of writing was measured by a writing pretest. Afterward, the students in the experimental groups received the same treatment but in different way. The selected texts and paragraphs and writing tasks were taught to the experimental groups through spacing instruction and massed instruction. In massed class, each text was taught during 60 minutes to the students. In fact, 60 minutes was allocated to each session. In spacing class, the 60 minutes were divided into three 20-minute sessions. The spacing class was held 3 times a week but the massed class was held once a week. In the treatment phase, the massed group was taught each text in an intensive 60-min session, whereas the spacing group was taught in three short sessions (about 60 min in total). The first session lasted for 20 minutes; the second occurring 2 days after the initial session lasted 20 minutes; and the third session took 20 minutes and was held 2 days after the second session.

The whole instruction lasted eight sessions. In the first two sessions, the OQPT and the pretest were administered, respectively; in five sessions, the students received the treatment (each session one writing text and some paragraph writing were taught), in the eighth session, the writing posttest

was given to the participants of both experimental groups to measure the effects of the treatment on their writing in general and CFA in particular.

Data Analysis

The gathered data were analyzed through using SPSS software, Version 22. First, Kolmogorov–Smirnov (K-S) test was used to check the quality of data normality. Second, descriptive statistics were calculated. Third, paired and independent samples *t* tests were run to measure the effects of the treatment on the students’ reading comprehension.

Results

The details of the findings are explained as follows. Before conducting any analyses on the pretest and posttest, it was better to check the normality of the distributions. Accordingly, K-S test of normality was conducted on the data gathered from the abovementioned tests. The results are illustrated in Table 1. The *p* values under the *significant* column in Table 1 determine whether the distributions were normal or not. A *p* value greater than .05 reveals a normal distribution, whereas lower than .05 shows that the distribution has not been normal. As all the *p* values in Table 1 were larger than .05, it could be found that the distributions of scores for the pretest and posttest gathered from both groups had been normal. It is thus logical to proceed with parametric test (i.e., independent and paired samples *t* tests in this case) and make further comparisons between the participating groups.

Table 1. One-Sample Kolmogorov–Smirnov Test (Groups’ Pre- and Posttests).

Pretest	Pretest	Posttest	Posttest
Massed	Spacing	Massed	Spacing

N	20	20	20	20
Normal parameters				
M	14.2400	14.0800	14.1200	16.7200
SD	2.58651	2.8148	2.71293	2.03141
Most extreme differences				
Absolute	.204	.250	.220	.159
Positive	.204	.250	.220	.158
Negative	-.137	-.198	-.163	-.159
Asymmetrically				
Significant (two-tailed)	.248	.089	.177	.556
Test distribution is normal				

Table 2 reveals the descriptive statistics of both groups on the posttest. The massed group's mean score is 14.24 and the spacing group's mean score is 16.72. The means of the groups are different and spacing group seems to perform better than the massed group.

Table 4. Descriptive Statistics (Posttest of Both Groups).

Groups	n	M	SD	SE Mean
Posttest				
Massed	20	14.2410	2.71294	.54259
Spacing	20	16.7210	2.03141	.40629

However, an independent samples *t* test was run to show if there was any significant difference between the posttests of both groups; based on this table, the difference between the groups is significant at ($p < .05$) as significant (.000) is less than 0.05. In fact, the spacing group outperformed the massed group on the posttest. From another point of view, it can be said that as the observed *F* (3.569) is greater than the critical *F* (2.41) with $df = 48$, the difference between the

groups is significant at ($p < .05$). The pre- and posttests of each group was compared via using a paired samples t test. As significant (.726) is greater than 0.05, the difference between the posttest and pretest of the massed group is not significant. Moreover, as significant (.000) is less than 0.05, the difference between the posttest and pretest of the spacing group is significant.

Discussion and Conclusion

In this part, the research question “Is there any significant difference between Iranian EFL learners’ writing performance through spacing instruction and massed instruction?” is answered based on the findings obtained in the tables above. After collecting the data, the researchers used paired and independent samples t tests to analyze them to find out the effectiveness of treatment on the learners’ writing accuracy, fluency and complexity. The outcomes manifested that those receiving spacing instruction had better achievements compared with those who were trained through massed instruction. The results statistically showed that spacing group significantly did better than the massed group ($p < .05$). Therefore, the null hypothesis of the study “There is not any significant difference between Iranian EFL learners’ writing through spacing instruction and massed instruction” was rejected. The outcomes indicate that spacing instruction enhanced Iranian EFL learners’ writing.

In Neisi, Anwar and Namazidost (2020) words, research in the field of experimental psychology has shown that instruction provided at regularly spaced intervals (spaced distribution) leads to better long-term retention than instruction given in one continuous, uninterrupted session (massed distribution). For example, students spending 30 minutes studying a word list would have better memory of the words if they break the 30 min into three 10-minute sessions spaced over several days or weeks, rather than spending the time in a single 30-minute session. According to Carpenter et al. (2012), “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” (p. 5). Through using spaced instruction, students can learn even more vocabulary items with more self-confidence. 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.

The outcomes declared that EFL practitioners can synthesize spacing as a conducive teaching technique into the curricula and educational materials for better writing skill achievements. Findings of this study are in line with [Rohrer and Taylor \(2006\)](#) that affirmed the vital advantage of utilizing the spacing impact for complicated numerical ability movement and [Moulton et al. \(2006\)](#) affirmed that teaching a specific medical procedure strategy through spaced interims gave premiere results than instructing through one massed circulation practice session. The findings of the present study would encourage teachers to teach their students through spaced instruction as this type of instruction is more useful than the massed one. The findings can help English teachers whether to use spacing instruction or massed instruction. 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 vocabulary through using spacing instruction and massed instruction.

While conducting the present study, some recommendations came across the researcher's mind. The first recommendation for the next studies is to include more participants to get more comprehensible results. The second recommendation for the future studies is to work on other language proficiency levels-elementary, lower-intermediate, and advanced. The third suggestion is that the next studies are recommended to conduct similar topics in other geographical areas. Finally, future researches are offered to check the impacts of massed and spaced instructions on other skills and sub-skills of language. There were limitations the researcher faced. One constraint was that the research involved only students aged 19 to 23 years. The findings cannot, however, be extended to the other age groups. The other limitation referred to the treatment duration which was short. This study was restricted to only 40 Iranian EFL respondents; it could be executed in other settings of the EFL and the ESL with larger number of participants.

To sum up, the findings of this study demonstrated that spacing instruction leads to better learning than massing instruction. The findings revealed that spacing group had better performance on writing posttest thanks to spacing instruction. From the obtained findings, it can be concluded that learning through spaced distribution instruction gives the learners a better chance to retain an adequate amount of knowledge gained from instruction until the next opportunity for review

blooms, either accidentally through input, explicitly via additional instruction, or through the necessity to utilize the specific item in speaking, reading, or writing Miles (2014).

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