Journal of Studies in Learning
and Teaching English
Volume. 8, Issue. 1, Ser. 15, (2019), 115-127

The Influence of Asynchronous Computer-Mediated Versus Conventional Corrective Feedback on Iranian EFL Learners' Writing Accuracy

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Abstract. The purpose of this study was to investigate the effects of asynchronous computer-mediated versus conventional corrective feedback on Iranian learners' writing accuracy. To this end, 38 pre- intermediate female students aged 21 to 28 participated in the study. They were asked to write two compositions. Only errors regarding English articles were treated using highlights and comments features of word processor for the first group of participants receiving e-mail, and red pen for the second group of participants receiving hard copies. Direct corrective feedback was provided for both electronic and print students. Results revealed that although providing corrective feedback was effective in both contexts, the learners who received feedback via e-mail showed more absorption of the grammatical feedback than the conventional feedback group.

Keywords: Corrective feedback, asynchronous computer-mediated feedback, conventional feedback

Received: September 2019; Accepted: November 2019
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1. Introduction

The role of written corrective feedback (WCF) in the process of acquiring a second language (L2), has been an issue of notable controversy among theorists and researchers (eg. Bitchener & Knoch, 2009, 2010; Krashen, 1984;). While corrective feedback (CF) has been widely used as a pedagogical means, practical and theoretical objections have been raised to its effectiveness (e.g. Truscott, 1999; 2009).

Teachers of second or foreign languages and researchers have long been maintained that written corrective feedback can help students learn the targeted linguistic forms and give them the ability to increase the correct use of target structures. Hence, they continuously attempt to find an effective way to provide written WCF to give students opportunity to improve their writing accuracy.

In the process of learning target language, learners possibly make syntactic errors and mistakes. When learners make mistakes, teachers usually try to give students appropriate feedback as to guide them towards the target language. By providing appropriate corrective feedback, teachers can effectively cope with the failure learners indicate between what they receive as input and what they produce as output (Campillo, 2003). Providing students with corrective feedback facilitates the process of experiencing the effect of what they have produced as a guide to their future output (Brown, 1998). Lightbown and Spada (1990) defined corrective feedback as any indication teachers made to help learners understand that their use of the target language is in error and needs to be corrected.

Traditionally teachers have provided hand-written corrective feedback on students writing, however through the past few years computers have paved the way to educational environments, and after introducing the Internet, attentions were attracted to the benefits technology can bring into educational system, and more specifically language learning. Therefore, studies were conducted to investigate the effects of computer-assisted language learning (CALL), and computer-mediated corrective feedback. At the end of the 20th century, computer-mediated communication (CMC) and internet have remolded the language learn-

ing processes. Besides information processing, computers were used as a means for communication (Gundez, 2005). Hiltz and Turoff (1978) first coined the term CMC when experimenting on computer conferencing as a tool of communication on the Internet. They defined CMC as a medium for generating, understanding, transmitting, decoding, and encoding information. Barnes (2002) also viewed CMC as a broad range of technologies that have been integrated into human interaction and sharing of information with the use of interconnected networks including e-mail, discussion groups, and real-time chat.

Conventionally CMC is divided into two modes: synchronous (SCMC) and asynchronous (ACMC) (Pfaffman, 2008). Warschauer (2001) provided a definition for different modes of CMC as: (1) "Synchronous computer-mediated communication, by which communication happens in real time via chat or online network; (2) Asynchronous computer-mediated communication, by which communication takes place in a delayed manner for instance by e-mail; and (3) The reading and writing of documents online" (p. 207). Asynchronous CMC (ACMC) provides opportunities for both interlocutors to review, revise, or even drop the communication before sending information (Heisler & Crabill, 2006). This feature of ACMC involves learners in the process of critical thinking, and problem solving (Lee, 2004), since learners focus on more purposeful communication. Lee (2004) also pointed that ACMC provided opportunities for learners to take notice of erroneous structures, and therefore, output modification such as self-repairing could happen. Moreover, as adopted in language learning and teaching, CMC is considered to have more positive impacts on learners, since students feel less bored in a more interesting environment compared to class restricted one. Results obtained from research in recent years indicated that learners hone their writing accuracy in specific targeted areas when teachers provided written corrective feedback (e.g. Ellis et al, 2008; Bitchener, 2008).

Studies which have been done on e-mail communication confirmed that electronic tools are beneficial for learners' productivity as measured by the number of words they produced (Gonz?lez-Bueno, 1998; Gonz?lez-Bueno & Prez, 2000). St. John and Cash (1995) conducted a research on an adult learner exchanging e-mail with a native speaker, and

found out that the learner improved his language ability because he studied new vocabularies and grammatical structures when receiving e-mails, and uses them to improve the content of his letters. In the same vein, Nagata (1993, 1997) reported positive findings in her study of 14 second year Japanese students' acquisition of Japanese particles. Students were divided into two groups: one receiving online metalinguistic feedback by means of online particle exercises, and the other receiving translation feedback on the same online particle errors. The result of the study showed that the group which received metalinguistic electronic feedback outperformed those of translation group. Similarly, Sauro (2009) also in a study reported that asynchronous and synchronous CMC were perfect environments for both teachers and learners, since they facilitate the occurrence of noticing, and increases the learners' awareness of their errors. Another study by Razzaghifard and Razzaghifard (2011) examined corrective feedback in a computer-mediated communicative setting, and indicated that students who received computer-mediated corrective perform better than the students receiving no feedback.

As has been noted, although many studies have been conducted on the effectiveness of different types of WCF, there is still a matter of controversy over what types of WCF is more beneficial to students' writing accuracy. As Bitchener, Young, and Cameron (2005) stated, further research is needed to examine the influence of different types of corrective feedback with less advanced learners, therefore; the present study aims at investigating the effects of asynchronous CMC in comparison to the conventional pen-and-paper approach on students' writing accuracy to find out which of these two types of feedback is more helpful in retentiveness of targeted item.

2. Method

This study was conducted with 36 adult Iranian students learning English as a foreign language. Before the study begins, Oxford Placement Test (2007) was given to the students, and the results showed that students were pre-intermediate learners. The study was done considering direct corrective feedback in two different contexts, namely asynchronous and conventional to investigate which one is more effective to enhance

the writing accuracy of the learners.

2.1. Design

The focus of this study was on correcting students' written work. The researcher targeted past tense verbs as a grammatical category and made correction on errors related to this element.

2.2. Participants

Participants of the present study were 38 EFL learners. They were randomly chosen among a number of students, and according to Oxford Placement Test (2007), they were identified as pre-intermediate learners. All were female and Persian native speakers.

2.3. Procedure

Participants of the study were randomly assigned to one of the two types of error treatment method. Asynchronous computer-mediated corrective feedback was applied using e-mail, and errors were corrected directly using word processor comments and highlighting features. Conventional corrective feedback, on the other hand was applied using red pen, and error correction was provided directly. The study was done during two sessions, each lasted about 40 minutes. During each session students were given topics and were asked to write a composition about the given topic. Participants were supposed to write a minimum of 150 word composition in 40 minutes. While researcher was correcting the compositions, only errors related to the targeted structure were treated until the last session. A week after each session, compositions with correction on targeted structure were delivered to students.

After grading essays, two raters selected papers and corrected them separately. Table 1 shows the inter-rater correlation.

Table 1: Inter-rater correlation

		Second rater
First rater	Pearson correlation	.965
	Sig.	.000
	Spearman's rho	.904
	Sig.	.000

According to table 1, the correlations between the raters' scores are .965 and .904. Thus, based on the Spearman-Brown prophecy formula (Henning 1987, p.82), inter-rater coefficient is .98. It can be concluded that these two sets of scores are highly reliable. One group of the students was chosen randomly to send and receive their compositions via e-mail. Errors related to the targeted structure were provided using highlights and comments. The other group of students participated in the study was asked to hand their compositions in hard copies, and to receive them in hard copies as well. Errors related to the targeted structure were treated using red pen.

2.4. Treatment

One group of the students was chosen randomly to send and receive their compositions via e-mail. Errors related to the targeted structure were provided using highlights and comments. The other students participated in the study was asked to hand their compositions in hard copies, and to receive them in hard copies as well. Errors related to the targeted structure were treated using red pen.

3. Data Analysis

To find out if providing online corrective feedback affects learners' writing performance, the researcher ran the paired samples *t*-test to compare the pre and post-test scores of the online corrective feedback group. Tables 2 and 3 show the results.

Table 2: Descriptive statistics of the pretest and post-test scores of the online corrective feedback group

		Mean	N	Std. Deviation	
Online corrective feedback group	Pretest	6.8889	18	1.02262	.24103
	Post-test	7.4611	18	1.21032	.28527

Table 3: Paired samples test to compare the pretest and post-test scores of the online corrective feedback group

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Online corrective feedback group	Pretest -Post-test	-.5722	.83088	.19584	-.88541	-.05904	-2.411	17	.027

The results of the paired t-test in table 3 indicate that there is a significant difference between the pretest and post-test scores of the online corrective feedback group ($sig. = .02, p < .05$). As table 2 shows, the participants of the online corrective feedback group gained higher mean score in the post-test (mean = 7.46) than the pretest (mean = 6.88). It can be inferred that online corrective feedback has a positive effect on learners' writing performance.

To determine if providing conventional corrective feedback affects learners' writing performance, the paired samples t-test was run. Tables 4 and 5 show the pertaining results.

Table 4: Descriptive statistics of the pretest and post-test scores of the conventional corrective feedback group

		Mean	N	Std. Deviation	Std. Error Mean
Conventional corrective feedback group	Pretest	6.6278	18	1.02142	.24075
	Post-test	7.0056	18	1.29636	.30556

Table 5: Paired samples test to compare the pre-test and post-test scores of the conventional corrective feedback group

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Conventional corrective feedback group	Pretest-Post-test	-.3778	.79005	.18622	-.67066	.11511	-2.492	17	.042

Based on the results presented in Table 5, the difference between the pretest and post-test scores of the conventional corrective feedback group is significant ($sig. = .042, p < .05$). According to Table 4, the participants of conventional corrective feedback group gained higher score in the post-test (mean =7) than the pretest (mean =6.62). Therefore, it can be concluded that providing conventional corrective feedback positively affects learners' writing performance.

The researcher then ran the *t*-test analysis to compare the participants' writing performance receiving online corrective feedback and the participants' writing performance receiving conventional feedback. Tables 6 and 7 show the results of the t-test for the pretest scores.

Table 6: Descriptive statistic of the pretest scores of online and conventional corrective feedback groups

	Groups	N	Mean	Std. Deviation	Std. Error Mean
Pretest	Online corrective feedback	18	6.8889	1.02262	.24103
	Conventional corrective feedback	18	6.6278	1.02142	.24075

Table 7: Independent sample *t*-test to compare the pretest scores of online and conventional corrective feedback groups

		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
Pretest	Equal variances assumed	.350	.558	-.408	34	.686	.2611	.34067	-.83122	.55344
	Equal variances not assumed			-.408	34.00	.686	.2611	.34067	-.83122	.55344

According to Table 7, there is not any significant difference between the pretest scores of online and conventional corrective feedback groups (sig.=.68).

To investigate the difference between the performance of the online and conventional corrective feedback groups in the post-test, the researcher ran the independent sample *t*-test. Tables 8 and 9 show the results of the *t*-test.

Table 8: Descriptive statistic of the post-test scores of online and conventional corrective feedback groups

	Groups	N	Mean	Std. Deviation	Std. Error Mean
Post-test	Online corrective feedback	18	7.4611	1.21032	.28527
	Conventional corrective feedback	18	7.0056	1.29636	.30556

Table 9: Independent sample t-test to compare the post-test scores of online and conventional corrective feedback groups

		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
Post-test	Equal variances assumed	.744	.395	2.093	34	.005	.4555	.41803	-.79398	.90509
	Equal variances not assumed			2.093	33.84	.005	.4555	.41803	-.79412	.90523

From the results depicted in Table 9, it can be inferred that the difference between the post-test scores of the two groups is significant ($sig. = .005, p < .05$). Based on the mean scores presented in Table 8, the online corrective feedback group (mean =7.46) outperformed the conventional corrective feedback group (mean = 7). Therefore, it can be concluded that there is a significant difference between the participants' writing performance receiving online corrective feedback and the participants' writing performance receiving conventional feedback. Based on the results, learners receiving online corrective feedback performed better than learners receiving conventional feedback in using past tense verbs.

4. Summary and Discussion

The data analysis of the study indicates that asynchronous computer-mediated corrective feedback was more effective regarding the improvements of learners' writing accuracy. As data analysis displayed, the learners who received asynchronous computer-mediated corrective feedback showed more accuracy in using past tense verbs in their second compo-

sition than the other students who received conventional corrective feedback. Accordingly, it is believed that asynchronous corrective feedback via e-mail can be an advantageous way of correcting students' errors, since students will have opportunity to relate to their previous errors, and the corrected forms conveniently by using their e-mail account. Also, they might have fewer problems reading their instructor's handwriting; and therefore, can understand the given feedback effortlessly.

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