Complexity, Accuracy, and Fluency in EFL Writing: A Study of Long Term Effects of Blended Learning

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Abstract: Blended learning (BL) is the system which is a combination of classroom or face-to-face instruction and instruction mediated through technology. It is supposed to be used as a complement to the traditional classroom contexts. It has been the independent variable in a large number of studies. The study was intended to examine long term effects of blended learning on Iranian EFL learner's writing proficiency which includes dimensions, such as complexity, accuracy, and fluency. 50 EFL learners were placed in each of the blended learning (BL) and classroom learning (CL) groups. Participants received exactly the same type of materials and amount of instruction. For participants of the CL group, everything happened in the classroom; nevertheless, those in the BL group received extra materials and feedback through the web. Results showed the participants of the BL group outperformed those in the CL group in the three features in question. As long as long term effects were concerned, results of the delayed posttest indicated that participants of the BL group maintained the effects of the treatment for complexity and fluency. Results of this test did not show any significant difference for accuracy. The study showed that blended learning and be used as an effective alternative in EFL writing classes to enhance writing proficiency.

Keywords: Blended learning; EFL writing proficiency; complexity; accuracy; fluency.

Introduction

Blended learning (BL) is the system which is a combination of classroom or face-to-face instruction. It is a kind of instruction which is mediated through technology (Graham, 2006). BL has provided opportunities for English language (EFL) teachers to benefit

from the positive effects it has on second language (L2) learners. In recent years, EFL/L2 teachers have been incorporating online activities into their traditional classroom practice to make their teaching more effective, meaningful, and fun (Neumeier, 2005). BL has created an instructional context with a variety of strategies and pedagogical benefits, such as platforms for language learners to be involved in more meaningful interaction and communication (Graham, Allen & Ure, 2005). This system of education can be beneficial for both language teachers and learners. Language teachers can enjoy incorporating technological developments into their practice in classroom. They can provide extra materials and information disregarding time and place; they can stay in touch with their students to tackle their problems and put them on the right track at the right time. Students also can benefit from appropriate (educational) technology, such as classware, search engines, and social networks. They can use the e-tools along with their textbooks, use search engines to look for information they need for their assignments and lessons, and use social networks to get in touch with their teachers and classmates.

All the language skills (listening, speaking, reading, and writing) and micro-skills (pronunciation, grammar, spelling, and other micro-skills) can be improved using a blended learning. This study took complexity, accuracy, and fluency (CAF) the three dimensions of EFL writing fluency (Housen, Kuiken, & Vedder, 2012) into consideration. It is out of question that writing is among those skills that EFL learners cannot develop independently, so they need appropriate instruction and materials. It is believed that a blended learning system can be an excellent option for EFL writing teachers to make their instruction more effective and, at the same time, attractive for their learners.

Literature Review

The use of technology in EFL classroom has become inevitable, mainly due to significant changes that are happening in the modern time when there is a great

emphasis on globalization (Kramsch, 2014). This trend has affected various aspects of language learning and teaching, including the writing skill. Numerous studies have utilized different forms of technology as a complement to traditional writing classes. For example, Chang, Chang, Chen, & Liou, (2008) examined collocations in writing among Taiwanese EFL learners. They provided their learners with an online collocation aid. This was done to identify and correct miscollocations as a result of the interference from learners' L1. They concluded that the online system they employed could help EFL learners use collocations more effectively in their future writing.

Pinkman (2005) conducted an action research project investigating the effects of using blogs in EFL classes at a Japanese university. The study was mainly concerned out-of-class activities to encourage language learners benefit from "authentic environment outside the classroom" (p. 12). The main purpose of the study was to provide extra contexts and opportunities for EFL learners to practice communication skills, especially writing abilities. Pinkman also scrutinized the efficacy of blogs in learner independence. Results of interviews and questionnaires indicated that learners had a positive attitude towards using the blog project. They believed that blogging helped them learn more out of the classroom. The main reason for this was the opportunity using blogs provided them to have more communication with their peers and receive feedback from them. Some language learners even pointed out that their oral skills also improved, although it was not the focus of the study.

Fellner and Apple (2006) encouraged Japanese elementary EFL learners to join a blog writing program aiming at increasing their writing proficiency (lexical complexity and fluency) during a seven-day intensive EFL course. Participants had to complete tasks both online and in a classroom setting. Word counts were used to measure writing fluency on the pretest (less than 35 words over a twenty-minute period) and posttest (350% increase in the word count).

Fidaoui, Bahous, and Bacha (2010) study used computer-assisted language learning (CALL) techniques in elementary ESL writing among Lebanese language learners. More specifically, their study was concerned with motivating these learners (N = 48) to develop better writing abilities. The study was also intended to explore language learners and teachers' perception of CALL in EFL classroom. The results of their study showed the participants of the study had the same motivational factors to produce well-developed written work. Furthermore, no significant differences were found between teachers and learners' perceptions towards the use of technology in EFL writing classes.

Eydelman (2013) introduced an academic writing course she designed for sophomore students at Novosibirsk State University in Russia. Students were majoring in teaching, translation, interpretation and intercultural communication in the foreign languages department. She mentioned six benefits for a blended course in writing. The first reason she mentioned is motivation because they are writing for a larger audience (Lee, 2010; Richardson, 2010), and they can write in a way to appeal their peers (Turgut, 2009; Pinkman, 2005; Zhang, 2009). In addition, she believed that blended learning approaches provide learners with a space to share their experiences with others (Davoli, Monari, & Eklundh, 2009; Richardson, 2010; Solomon & Schrum, 2010). She also pointed out that providing feedback as well as informal communication are the other benefits of such programs. The last two advantages of incorporating blended learning in a writing course are supporting course management because learners can access the materials all the time as well as providing additional channels for communication and interaction (Richardson, 2010; Solomon & Schrum, 2010).

So and Lee (2013) examined EFL learners' attitudes towards an instructional process-oriented writing model for EFL writing in a blended learning environment. They were also concerned with the possible effects the model would have on developing EFL writing in higher education. The model combined the process-oriented writing approach with online and offline writing activities. The results of the study showed that

participants of the study believed that the model provided them opportunities to improve their writing ability, as their scores at the end of the study showed.

Ghahari (2014) compared the effects of classroom learning, blended learning, and web-based learning among Persian-speaking EFL learners' writing performance. Using a pretest-posttest design, she found out that although all participants improved their writing ability from the pretest to the posttest, participants of the blended learning group performed significantly better than those of classroom and web-based learning in their writing assignments, while there were no statistically significant differences between participants of the web-based and classroom learning groups.

Considering the effects of blended learning on oral and written fluency and proficiency, Rubio (2014) compared the effects of blended learning and a face-to-face course on these two aspects of learner language. In his study, the participants were required to take an oral and a written test as the pretest and one after the two-semester course as the posttest. To analyze writing proficiency and fluency, they used the entire writing assignments students had produced.

The results of his study showed that participants of both groups showed highly significant ($p < .01$) proficiency gains in both speaking and writing, as the results of the pretest and posttest indicated. Nonetheless, post test results showed no significant differences in participants' proficiency over time. As far as writing fluency was concerned, results showed that the participants of the blended learning group only slightly ($p = .048$) outperformed those in the control group.

Wang (2015) studied the effects of collaborative writing through wikis on 48 Taiwanese ESP learners' production and interaction in a business writing course. In the initial stages of the study, the participants of the experimental group (N = 24) were instructed on how to use wikis in short practice sessions with the researcher. Later, during the

twelve-week experiment, participants were required to write their assignments and collaborate through wikis. A pretest-posttest design was used to answer the research question of the study aiming at measuring Format/Layout, Purpose and Audience, Organization, Content and Style, and Structure and Grammar.

Results indicated significant improvement in both wiki and non-wiki groups between pretest and posttest. Nevertheless, participants of the experimental group outperformed those of the control group in 'Purpose and Audience', 'Organization', 'Content and Style', and 'Grammar and Structure'. However, no significant differences were observed between participants of the two groups in 'Format and Layout'.

The application of BL in EFL contexts has become an important issue among second language acquisition (SLA) researchers (Larsen, 2012; Stracke, 2007). It has been an independent variable in a large number of L2 studies, the effects of which have been examined on language learners' attitudes and experience (Hong & Sammy, 2010; Miyazoe & Anderson, 2010; Trinder, 2016), vocabulary (Tosun, 2015), reading (Gilbert, 2013), listening (Kavaliauskiene, 2011), grammar (Vinther, 2012), as well as English for specific purposes (Beagle & Davies, 2013).

One of the most popular areas in which effects of blended learning have been closely examined is L2 writing (Eydelman, 2013; Ferriman, 2013; Larsen, 2012; Min, 2011; Miyazoe & Anderson, 2010; So & Lee, 2013). This quasi-experimental study was mainly concerned with the effects of BL on EFL learners' writing proficiency, which includes dimensions, such as complexity, accuracy, and fluency (Housen, et. al, 2012). In addition, the study was aimed to scrutinize if the possible effects of the treatment persisted over a longer period of time, which was seven sessions after the last instructional one. What makes this study different is the idea that EFL proficiency can be tapped using CALL techniques (blended learning in this study). In addition, long-

term effects of such techniques can be scrutinized more closely in studies like the present study. Therefore, the following research questions were posed:

1. Does blended learning have any significant effect on EFL learners' complexity, accuracy, and fluency in writing?
2. Does blended learning have long term effects on EFL learners' complexity, accuracy, and fluency in writing?

Method

You should provide sufficient detail to allow the work to be replicated. Methods already published should be indicated by a reference. Only relevant modifications should be described here.

Participants

The participants of the study were 50 Persian-speaking EFL learners from a private language institute in Isfahan. The 50 participants were selected from among 92 language learners (43 males and 49 females) from six intact classes of 13-16 participants. They were instructed by the same author and received exactly the same type and amount of instructional materials (both the textbook and supplementary materials) during the course. Although participants' gender did not play any role in the experiment, attempts were made to include an equal number of participants from each gender (27 males and 23 females). Furthermore, their ages ranged from 23 to 30, and they were at the upper-intermediate level of English proficiency. This was assured based on the placement procedure described in the following parts.

After the placement test, participants were randomly placed in two experimental (N = 25) and control groups (N = 25). In the experimental group, Blended Learning (BL), participants received part of their instruction through the web. More precisely, they received the supplementary materials and feedback through the net. In addition, they were supposed to email their assignments which the course instructor checked and

provided feedback using the Review section of MS Office. In the control group, Classroom Learning (CL), they received all the course materials (i.e., the textbook and supplementary materials) in the class. In addition, they were supposed to write their assignments on papers and submit them to the course instructor who returned them the following session with the feedback given on the assignments, the way it is conducted in traditional writing classes.

The Textbook and Supplementary Materials

All the participants of both BL and CL groups were provided with a textbook and supplementary materials. The textbook was Zemach and Rumisek (2005), "*Academic writing: From paragraph to essay*". The book consists of 12 units. In Units 1-7, students become familiar with the structure and types of paragraphs. Units 8-12 familiarize learners with the organization and features of essays. In addition, students learned about certain important characteristics of writing, such as organization of the paragraph and essay, different types of paragraph, how to outline an essay, and how to check for unity and coherence. It should be noted that all the participants of the experimental and control groups were required to study the book and do the exercises. It should be noted that this study was concerned with the paragraph only, and the treatment was conducted in Sessions 1-8.

In addition to the textbook, the participants of both BL and CL groups received supplementary materials about the issues discussed in class. For example, they received plenty of files on different types of paragraphs and how to punctuate and organize their writing assignments. These extra materials were sent to the experimental group by email and were given to the control group in print. Besides these texts, different videos related to the topic of each session were played and discussed in class. After the relevant instruction, the videos were sent to the participants: through email to the participants of the BL group and on CDs to their counterparts in the CL group.

Instruments

In order to collect the data, the following instruments were employed:

The placement test. In order to make sure that the participants were homogenous in terms of their level of EFL proficiency, the Oxford Placement Test, OPT, (Allen, 2004) was used. It is a valid and reliable test and a highly effective instrument in grouping students into appropriate levels. It can also be used as a quick measurement of students' general proficiency. The test and its criteria for placement were used to appropriately place learners in relevant proficiency levels. To do so, the scale suggested by the test developer was used. Learners were put in the target proficiency levels based on the scores they received and the placement criteria the test developer has suggested.

The pretest. In order to examine the impact of blended learning on EFL learners' writing proficiency (Complexity, Accuracy, and Fluency), the participants of both groups had to write several assignments during the course. The topics included descriptive, process, comparison/contrast, and problem/solution paragraphs. The first assignment, a paragraph about '*A problem in your community*', was the pretest. In fact, participants were required to write a paragraph of 100-120 words about the topic. This was followed by several other topics they were required to write one paragraph about. The pretest was conducted in class for both groups, and the learners were required to write the pretest in 20 minutes.

The posttest. In the 8th session of the course and in order to examine the effects of blended learning and classroom learning on EFL writing proficiency, participants were required to write a paragraph about a problem. In fact, they were asked to write one problem paragraph of 100-120 words about '*Effects of TV violence on children*'. Similar to the pretest, the posttest was conducted in class and the time limit was 20 minutes.

The delayed posttest. To examine the long-term effects of blended learning and classroom learning on EFL writing proficiency, participants of both the experimental and control group were asked to write a paragraph about the same pretest topic (*A problem in your community*) at the end of the course. This was done seven sessions after the main treatment. The delayed posttest would show whether blended learning and classroom learning had any long term effects on participants' CAF in writing. The length of the paragraph, the location, and the time limit for the delayed posttest were similar to the pretest.

Data Collection Procedures

In order to collect the data, 50 EFL learners at the upper-intermediate level of English proficiency participated in the study. These EFL learners had been learning English for a minimum of two years and had passed most of the courses of the institute. The first and most important factor that needed to be made sure of before the implementation of the treatment was the homogeneity of the participants. Although learners' proficiency levels had been checked upon their registration in the institute, it was especially imperative to make sure they were at the same level of EFL proficiency for this study. This was done to minimize effects of learner heterogeneity. Therefore, the OPT (Allen, 2004) was used. From among the 92 EFL learners who participated in the placement test, 50 EFL learners were randomly placed in the CL and BL groups. As mentioned above, these participants received their relevant treatment in six classes of 13-16 participants with the same teacher.

The participants in the control group received the instructional materials and feedback in the classroom. They were given the textbook (Zemach & Rumisek, 2005) at the beginning of the course. Each session, they covered a part of the book along with exercises and feedback on the assignments. The course took 19 sessions (17 instructional sessions and two sessions for the midterm and final exams) and was presented by the same instructor (the regular classroom teacher) who followed the syllabus, lesson plans,

and material provided by the textbook. Similarly, in the experimental group, participants received the same type of instructional materials as those in the control group. Nevertheless, they had to send their assignments and receive feedback by email (see Appendix for a sample assignment). For this purpose, the Review section of MS Office was used. The researcher used options, such as 'Track Changes', 'New Comment', 'Show Markup', and other features of this section to comment on the participants' assignments. It should be noted that participants of this group were instructed on the way such features would be used.

In the first session, all the participants were asked to write a paragraph (*A problem in your* city), which was considered as the pretest. They were required to write a paragraph of 100-120 words in 20 minutes. Then, in the 8th session, they were asked to write another paragraph about a similar topic as the pretest (*Effects of TV violence on children*), which was considered as the posttest. From the following session, participants of both experimental and control groups received the same type of instruction. This was done to examine the long-term effects of blended learning on the writing proficiency of the participants of the experimental group. Finally, on the last instructional session of the course, participants of both groups wrote a paragraph about the same topic they had for the pretest (*A problem in your* city). This paragraph which had the same features as the previous ones was considered as the delayed posttest.

Measurement Criteria

Based on Wigglesworth and Storch (2009), the following quantitative measures were used to analyze the performance of the participants. Fluency was measured by the average number of T-units per text, where a T-unit is a measurement in linguistics and refers to a main clause plus any subordinate clauses attached to it (Hunt, 1965). Complexity was measured by the proportion of clauses to T-units. Finally, accuracy was measured by the percentage of error-free T-units. For this purpose, two experienced

raters were asked to analyze T-units for all the three measurements, and the interrater reliability was .92.

Data Analysis

In order to answer the research questions of the study, the mean scores were analyzed using SPSS 21. First of all, to see if there was a statistically significant difference between the control and experimental groups in the pretest and posttest, the researcher used six independent samples *t*-tests with blended learning as the independent variable and CAF scores as the dependent variable. This would help answer the first research question. In addition, to answer the second research question, that is, the long term effects of the treatment on writing proficiency, three repeated-measures ANOVAs were run, with time as the independent variable and participants' CAF scores as the dependent variables.

Results

Results of the Pretest

In order to examine the impact of blended learning on EFL learners' writing proficiency (CAF), participants of the study had to write several assignments during the course, the first of which was considered to be the pretest. An independent samples *t*-test was conducted to see if there was a statistically significant difference between the performances of the experimental group with those of the control group. Table 1 presents the results.

Table 1. Independent samples *t*-test for pretest complexity

		F	*Sig.*	*t*	*df*	*Sig.* (2-tailed)
Pretest Complexity	Equal variances assumed	.658	.421	-.812	48	.421
	Equal variances not assumed			-.812	47.605	.421

As the results indicate, there was no significant difference, $t_{(48)}$ = -.812, p = .421, between the complexity scores of the control group (M = 117.48, SD = 11.51) and those of the experimental group (M = 119.25, SD = 12.62) in the pretest.

Table 2 presents the results of the independent samples t-test for participants' accuracy in the pretest.

Table 2. Independent samples t-test for pretest accuracy

		F	*Sig.*	*t*	*df*	*Sig.* (2-tailed)
Pretest Accuracy	Equal variances assumed	1.928	.171	-.029	48	.977
	Equal variances not assumed			-.029	36.920	.977

As the results indicate, there was no significant difference, $t_{(48)}$ = -.029, p = .977, between accuracy scores of the control group (M = 85, SD = 22) and those the experimental group (M = 85, SD = 12).

Similarly, Table 3 presents the results of the independent samples t-test for fluency.

Table 3. Independent samples t-test for pretest fluency

		F	*Sig.*	*t*	*df*	*Sig.* (2-tailed)
Pretest Fluency	Equal variances assumed	8.093	.007	-1.226	48	.226
	Equal variances not assumed			-1.226	42.739	.226

As can be seen, there was no significant difference, $t_{(48)}$ = -1.22, p = .226, between the fluency scores of the control group (M = 15.69, SD = 4.04) and those of the experimental group (M = 14.48, SD = 2.80) in the pretest.

The results of this part of the analysis implied that any changes in the performance of the participants would be the result of the implementation of the treatment.

Results of the Posttest

In order to examine the impact of blended learning on EFL learners' writing proficiency (CAF), participants of the study wrote a paragraph at the end of the treatment, which was considered to be the posttest.

Table 4 presents the results of the independent samples *t*-test conducted to see if participants' complexity was influenced by the treatment.

Table 4. Independent samples *t*-test for posttest complexity

		F	*Sig.*	*t*	*df*	*Sig.* (2-tailed)
Posttest Complexity	Equal variances assumed	1.434	.237	3.230	48	.002
	Equal variances not assumed			3.230	43.478	.002

As shown in Table 4, there was a highly significant difference, $t_{(48)} = 3.230$, $p = .002$, between complexity scores of the participants in the control group ($M = 118.74$, $SD = 16.59$) and those of the experimental group ($M = 137.15$, $SD = 23.18$) in the posttest.

Table 5 presents the results of the independent samples *t*-test conducted to see if participants' accuracy was influenced by the treatment in each group.

Table 5. Independent samples *t*-test for posttest accuracy

		F	*Sig.*	*t*	*df*	*Sig.* (2-tailed)
Posttest Accuracy	Equal variances assumed	2.366	.131	3.606	48	.001
	Equal variances not assumed			3.606	40.866	.001

The results show that there was a highly significant difference, $t_{(48)} = 3.60$, $p = .001$, between accuracy scores of the participants in the control group ($M = .90$, $SD = .08$) and those of the experimental group ($M = .97$, $SD = .05$).

Table 6 presents the results of the independent samples *t*-test conducted to see if participants' fluency changed as a result of the treatment.

Table 6. Independent samples *t*-test for posttest fluency

		F	*Sig.*	*t*	*df*	*Sig.* (2-tailed)
Posttest Fluency	Equal variances assumed	.218	.642	6.229	48	.000
	Equal variances not assumed			6.229	47.985	.000

Results show that there was a highly significant difference, $t_{(48)} = 6.22$, $p < .001$, between fluency scores of the participants in the control group ($M = 12.08$, $SD = 2.25$) and those of the experimental group ($M = 16.01$, $SD = 2.21$).

Results of the Repeated Measures Analysis (Pretest, Posttest, and Delayed Posttest)

In order to have a better picture of the interaction of time and group and to see how each group performed at different times, three mixed between-within subjects ANOVAs were conducted to assess the effects of blended learning on participants' writing proficiency across three time periods (pretest, posttest, and delayed posttest). Table 7 presents the results of multivariate tests for complexity.

Table 7. Multivariate tests for complexity

Effect		Value	*F*	Hypothesis *df*	Error *df*	Sig.
Time	Pillai's Trace	.269	8.662	2.00	47.00	.001
	Wilks' Lambda	.731	8.662	2.00	47.00	.001
	Hotelling's Trace	.369	8.662	2.00	47.00	.001
	Roy's Largest Root	.369	8.662	2.00	47.00	.001
Time * Group	Pillai's Trace	.201	5.916	2.00	47.00	.005
	Wilks' Lambda	.799	5.916	2.00	47.00	.005
	Hotelling's Trace	.252	5.916	2.00	47.00	.005
	Roy's Largest Root	.252	5.916	2.00	47.00	.005

The results indicate a significant interaction between group and time, Wilks Lambda = .799, $F_{(2, 47)}$ = 5.916, p = .005. Furthermore, there was a substantial main effect for time, Wilks Lamdba = .731, $F_{(2, 47)}$ = 8.662, p = .001, with the experimental group showing increased complexity across the pretest, posttest, and delayed posttest.

Table 8 presents the results of the between-subjects effects test for complexity.

Table 8. Tests of between-subjects effects for complexity

Source	*df*	*F*	*Sig.*
Intercept	1	8049.481	.000
Group	1	6.895	.012
Error	48		

The main effect comparing the two types of treatment (blended learning and classroom learning) was highly significant, $F_{(1, 48)}$ = 6.895, p = .012, suggesting a significant difference in the effectiveness of blended learning.

Table 9 presents the results of multivariate tests for accuracy.

Table 9. Multivariate tests for accuracy

Effect		Value	*F*	Hypothesis *df*	Error *df*	*Sig.*
Time	Pillai's Trace	.169	4.769	2.00	47.00	.013
	Wilks' Lambda	.831	4.769	2.00	47.00	.013
	Hotelling's Trace	.203	4.769	2.00	47.00	.013
	Roy's Largest Root	.203	4.769	2.00	47.00	.013
Time * Group	Pillai's Trace	.036	.888	2.00	47.00	.418
	Wilks' Lambda	.964	.888	2.00	47.00	.418
	Hotelling's Trace	.038	.888	2.00	47.00	.418
	Roy's Largest Root	.038	.888	2.00	47.00	.418

The results indicate no significant interaction between group and time, Wilks Lambda = .964, $F_{(2, 47)}$ = .888, p = .418. Nevertheless, there was a substantial main effect for time, Wilks Lamdba = .831, $F_{(2, 47)}$ = 4.769, p = .013, with the experimental group showing increased accuracy across pretest, posttest, and delayed posttest.

Table 10 presents the results of the between-subject effects test for accuracy.

Table 10. Tests of between-subjects effects for accuracy

Source	*df*	*F*	*Sig.*
Intercept	1	7705.950	.000
Group	1	4.435	.040
Error	48		

The main effect comparing the two types of treatment (blended learning and classroom learning) was highly significant, $F_{(1, 48)}$ = 4.435, p = .040, suggesting a significant difference in the effectiveness of blended learning. Finally, Table 11 presents the results of multivariate tests for fluency.

Table 11. Multivariate tests for fluency

Effect		Value	*F*	Hypothesis *df*	Error *df*	*Sig.*
Time	Pillai's Trace	.173	4.930	2.00	47.00	.011
	Wilks' Lambda	.827	4.930	2.00	47.00	.011
	Hotelling's Trace	.210	4.930	2.00	47.00	.011
	Roy's Largest Root	.210	4.930	2.00	47.00	.011
Time * Group	Pillai's Trace	.361	13.284	2.00	47.00	.000
	Wilks' Lambda	.639	13.284	2.00	47.00	.000
	Hotelling's Trace	.565	13.284	2.00	47.00	.000
	Roy's Largest Root	.565	13.284	2.00	47.00	.000

The results indicate a significant interaction between group and time, Wilks Lambda = .639, $F_{(2, 47)}$ = 13.284, p < .001. Furthermore, there was a substantial main effect for time, Wilks Lamdba = .827, $F_{(2, 47)}$ = 4.930, p = .011, with the experimental group showing increased fluency across the pretest, posttest, and delayed posttest. Table 12 presents the results of the between-subject effects test for fluency.

Table 12. Tests of between-subjects effects for fluency

Source	*df*	*F*	*Sig.*
Intercept	1	4079.955	.000
Group	1	4.168	.047
Error	48		

The main effect comparing the two types of the treatment (blended learning and classroom learning) was highly significant, $F_{(1, 48)}$ = 4.168, p = .047, suggesting a significant difference in the effectiveness of blended learning.

Discussion

The research questions addressed in the study concerned the (long term) effects of blended learning on EFL learners' writing proficiency. The analysis of posttest texts written by the learners in the experimental group revealed a positive effect on Complexity (p = .002), Accuracy (p = .001), and Fluency (p < .001). The significant

differences in participants' performances in general have been observed in previous research examining the effects of blended learning on writing performance (Chang, et. al., 2008; Eydelman, 2013; Fidaoui, et. al., 2010; Ghahari, 2014; Pinkman, 2005; So & Lee, 2013; Vinther, 2012; Wang, 2015). All these studies, except Ghahari (2014), indicated that using CALL techniques in general and blended learning in particular resulted in better writing performances in the experimental groups. Ghahari, however, found that the blended learning participants performed better than those in the web-based learning and classroom learning groups. In fact, she found that EFL learners' performances in the web-based learning and classroom learning groups did not show any statistically significant differences.

Considering the effects of the treatment on participants' writing proficiency, results are partially in line with Fellner and Apple (2006) who examined the effects of blogs on EFL writing fluency and lexical complexity. Their results showed a significant (350%) increase in EFL learners' writing fluency. Nevertheless, Fellner and Apple did not examine the effects of blogging on EFL learners' grammatical complexity and accuracy, which were examined in the present study.

The results of the study are somehow different from those of Rubio (2014) who found that participants of the blended learning group were not significantly different from those of the control (face-to-face) group in both oral and writing proficiency. Nevertheless, as long as fluency was concerned, participants of the experimental group outperformed those of the face-to-face group.

The results from both posttest and delayed posttest showed that the participants of the study significantly improved their writing proficiency, and that participants of the experimental group significantly outperformed in all the dimensions of writing proficiency, namely complexity, accuracy, and fluency. One of the main reasons for the results could be seen in the way these participants benefitted from the use of

technology. The fact that they had the possibility to use the Microsoft word processor can be an important reason why participants of the experimental group produced more accurate sentences, as this feature underlines the ungrammatical sentences and misspellings. This was a feature that was absent for participants of the control group. Nevertheless, they had the possibility to check their dictionaries (electronic or printed) or ask their instructor, as they did when they faced a problem. It is a fact that modern technology is facilitating learning a foreign language and such features are undeniable. Nevertheless, participants' accuracy did not show any significant differences over time, as the results of the repeated measures analysis indicated, which means grammatical knowledge is a kind of knowledge that requires a longer time to develop using blended learning.

As long as fluency is concerned, results showed that participants of the experimental group had more opportunities to recycle their language, as Fellner and Apple (2006) pointed out. Another reason that can be pointed out for the increase in the fluency of the participants is the confidence they gained during the course. This was strengthened by the positive attitude they developed towards writing in the foreign language. At the beginning of the course, the participants of both groups mentioned that they did not like to write in English and the main reason for taking the course was the requirements of the curriculum. Nevertheless, as the course progressed and they gained more confidence and positive feedback from what they did, they became more interested in writing and performed more fluently.

Participants' complexity was also affected by the fact that during the course, the instructor made them familiar with the type of grammatical structures they could use in writing, which were somehow different from what they had been used to. This is because the participants were more familiar with those structures that are more common in conversation. Therefore, the writing course gave them the opportunity to become familiar with those structures that are more common in formal writing,

especially different types of sentences, namely simple, compound, complex, and compound-complex sentences. They mentioned that the fact that they have more time to think before they write gave them the possibility to think about the structure and use more complex sentences. This possibility was more prominent for the participants of the blended learning group as it was more convenient for them to use different sources around them, despite the fact that all the materials and instructions were the same for the participants in both the experimental and control groups.

Conclusions

The results show that the blended learning platform can benefit EFL learners to significantly improve their writing ability, in general, and writing proficiency, in particular. This is mostly because language learners gained more confidence and independence using the features modern technology provides for them. It is believed that the participants of the writing course, especially those in the experimental group would continue developing their writing skill by benefitting from the experience.

Furthermore, this study has implications for any writing course in the EFL context, particularly because these learners have almost no contact with native speakers and authentic language in the community. A blended learning approach can provide such learners with the possibility to have more exposure to authentic materials. This opportunity has positive effects on their general proficiency. In fact, blended learning can fulfil the purposes of any writing course, namely "learning to write" and "writing to learn" (see Manchon, 2011).

The results of the study clearly showed that a blended learning approach can be quite facilitating for second language learners. It is believed that further research is required to strengthen the findings of blended learning research. An interesting line of research is to examine effects of small groups on writing proficiency. This can be done both online and in classroom to examine if blended learning can benefit language learners while they are working in groups. Another interesting line of research is to examine

effects of online peer editing on writing proficiency. Researchers who are interested in this type of study can also examine effects of consciousness-raising techniques conducted through blended learning on EFL writing proficiency. This is quite possible because word processing software programs, especially MS Office, have features such as **bolding**, underlining, and *italicizing* that can assist writing instructors implement their instruction.

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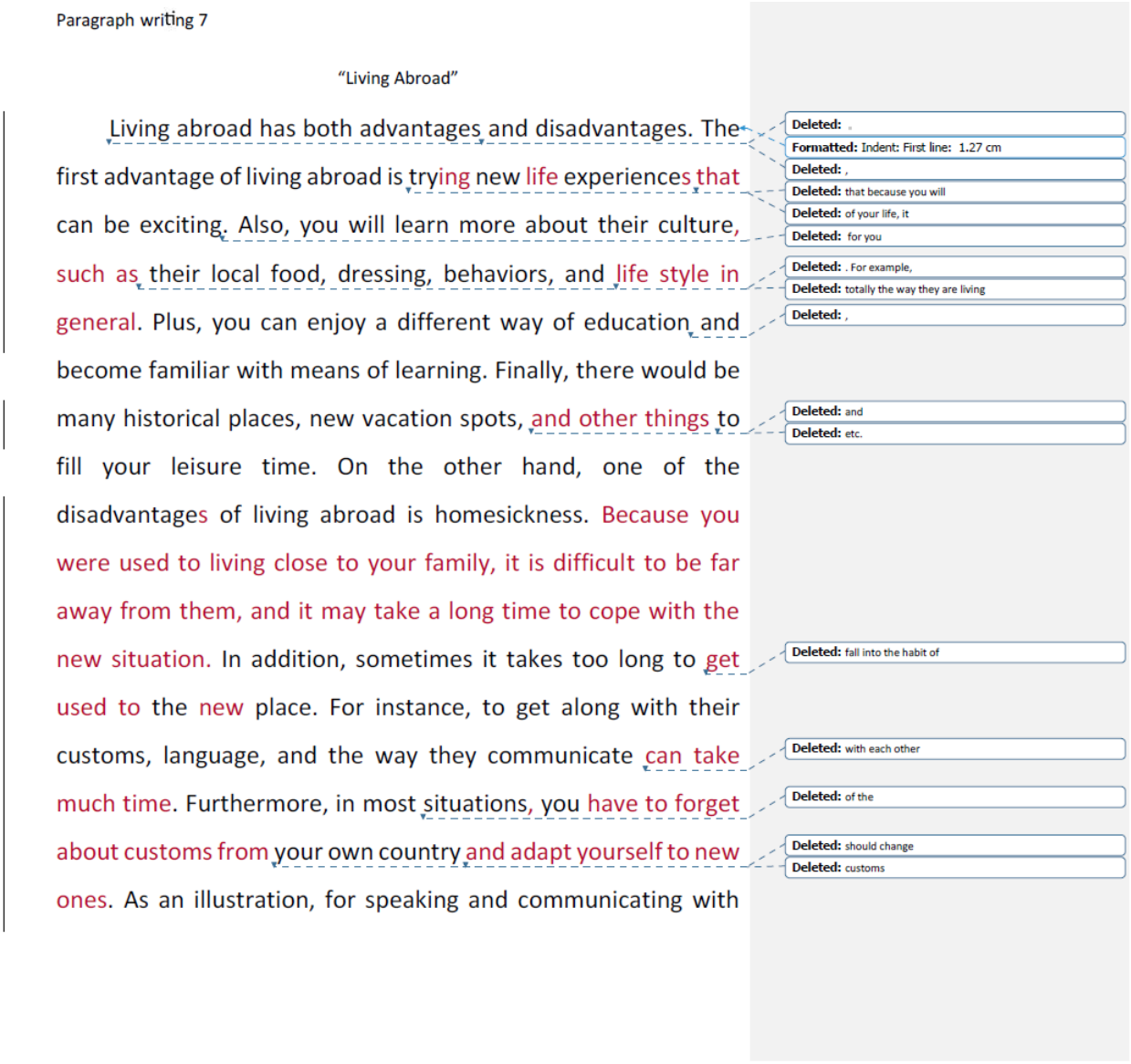
Appendix. Sample feedback to an assignment for the participants of the BL group



Paragraph writing 7

"Living Abroad"

Living abroad has both advantages and disadvantages. The first advantage of living abroad is trying new life experiences that can be exciting. Also, you will learn more about their culture, such as their local food, dressing, behaviors, and life style in general. Plus, you can enjoy a different way of education and become familiar with means of learning. Finally, there would be many historical places, new vacation spots, and other things to fill your leisure time. On the other hand, one of the disadvantages of living abroad is homesickness. Because you were used to living close to your family, it is difficult to be far away from them, and it may take a long time to cope with the new situation. In addition, sometimes it takes too long to get used to the new place. For instance, to get along with their customs, language, and the way they communicate can take much time. Furthermore, in most situations, you have to forget about customs from your own country and adapt yourself to new ones. As an illustration, for speaking and communicating with

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Formatted: Indent: First line: 1.27 cm
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Deleted: that because you will
Deleted: of your life, it
Deleted: for you
Deleted: . For example,
Deleted: totally the way they are living
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Deleted: customs

people, you should behave in a way to understand you better. In spite of the fact that living abroad has some disadvantages, it can be a good experience in life.

Deleted: their society

Deleted: their custom in order

A and B

The movie was exciting and beautiful.

If you exercise, you can enjoy the experience of being in shape and see the positive effects it has on your morale.

BUT

If you exercise, you can enjoy the experience of being in shape, and everyone will see the positive effects it has on your morale.

Adapt: match; When you live in a new country, you have to adapt yourself with their customs.

Adopt: accept/take; After marriage, most American women adopt their husband's name.

Adept: skillful; Some people are adept liars.

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