An Online System's Effect on Iranians' EFL Academic Writing Performance across Different Proficiency Levels*

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Abstract

This study aimed to discover whether an online writing system has any effect on Iranians' EFL academic writing performance. The study also sought to find out whether the proficiency level of learners influenced the effect of the system on academic writing. To meet this end, an online writing system was developed and 68 undergraduate students of the General English language course studying at Sharif University of Technology were requested to participate in this study. First, their English language proficiency was measured by a language proficiency test that included 80 questions of one of the latest versions of the official TOEFL iBT test, which was provided by the Educational Testing Service (ETS). Then, over an eight-week period, the participants were assigned to write eight versions of academic writing that followed a genre-based teaching approach through computer-based instructions. The writing scores were statistically analyzed and the results revealed that providing students with computer-assisted instruction (CAI) led to significant improvements in their academic writing performance. Moreover, according to the findings of this study, the learners' level of proficiency did influence the effect of the system.

Introduction

Technology and language education have been tightly connected for more than fifty years, and computer-assisted language learning (CALL) has been a subject of study for around 30 years. Throughout these three decades, the issue of utilizing computer-based teaching in language pedagogy has been investigated through scientific studies in many industrialized nations to seek evidence for the efficiency of technological inventions on learners' outcomes; however, CALL is a fairly new topic in Iran. Although studies have already been conducted to address the perceptions and attitudes of Iranian educators and learners' toward computer-based language education in the last decade, studies on the specific effect of CALL on teaching and learning appears to be inadequate.

Moreover, considering the increasing significance of conducting studies in the area of CALL, among the basic four language skills, writing seems to be the least-investigated skill. Actually, EFL writing courses aided by computers are among the environments which might have high degrees of potentiality in language education. Computers offer novel and unexplored ways to meet certain requirements that are generated by EFL writing strategies and frameworks. Well-established CALL software can be viewed as trusted teaching tools to greatly aid L2 writing instructors as well as EFL learners to overcome some of the disadvantages of the traditional methods of writing and thus derive pedagogical benefits with regard to writing skills. Note that the integration of computers may also support analysts and instructors to solve the mysteries of language learning, which are difficult to examine with predictable procedures. Therefore, in agreement with several linguists who consider CALL as an invaluable system for supporting far better language teaching and learning, finding methods to make computer-assisted instruction a part of EFL pedagogy, especially in the area of EFL writing, is required.

The current study contributes to our knowledge by addressing two crucial dilemmas: first, this research signifies the position of computer technology in educational settings as it specifically involves an

investigation of the effect of an online writing program on the ability of Iranian EFL students to write for academic purposes. Thus, the findings of this study can help the educational setting of Iran take advantage of new advances of technology and international methodologies of teaching. Secondly, the uniqueness of this study lies in the fact that this study tries to incorporate different EFL learners with varying proficiency levels, since as of now, very few researches have been reported on how L2 writers, at different English language proficiency levels, benefit from computer-assisted instruction (CAI). With the intention of making this function clear, the following research hypotheses were formulated:

H_{01}: An online writing system has no effect on the EFL academic writing performance of Iranian university students in the intermediate-low proficiency level.

H_{02}: An online writing system has no effect on the EFL academic writing performance of Iranian university students in the intermediate-high proficiency level.

H_{03}: An online writing system has no effect on the EFL academic writing performance of Iranian university students in the advanced proficiency level.

CALL and Second Language Writing

In L2 teaching, technology developments have revolutionized the manner of teaching, especially the teaching of writing. Recent work on teaching and learning L2 writing in the context of a computer has created and applied different systems and educational software in order to help students promote writing quality. Therefore, writing systems can be categorized into three main groups as follows:

Automated Writing Evaluation Systems

An automated writing evaluation (AWE) system is a well-known computer-generated rating program that was originally made to lessen the instructor's work in assessing repeated drafts of student essays and save the time of educators in assessing writings. The AWE methods were mostly produced for automatic scoring. Nevertheless, of late,

modern AWE programs have been equally applied for the analysis and training by providing feedback for assessing writings, with a view of improving writing quality. In this respect, several scholars have sought to examine the position created by AWE methods in terms of English writing efficiency and they appear to produce related findings. For instance, in an experimental evaluation, Wang, Shang, and Briody (2013) analyzed the overall effect of applying AWE on the improvement of the writing of 57 Taiwanese EFL learners and unearthed that students who applied AWE displayed evident writing enhancement. The research findings of a longitudinal study conducted by Li, Link, Ma, Yang, and Hegelheimer (2014) on 67 American students also pointed toward the effectiveness of AWE application for assessing writing skills. Furthermore, Li, Link, and Hegelheimer (2015) conducted another examination pertaining to the usefulness of AWE applications in writing classes to investigate how an AWE plan, including corrective feedback, influenced writing instruction as well as performance. The findings recommended that the implementation of the AWE program served American students to increase their accuracy throughout the processes of writing.

Although literature reviews have recommended that AWE methods play an important role in L2 writing improvement, there has been a limited concentration on pedagogy and education because AWE programs have been mainly used for assessment and scoring. Furthermore, it can be claimed that AWE applications have problems in providing feedback regarding the aspects of content and organization since the majority of AWE feedbacks seemed to be predominately concerned with grammatical structures rather than content and rhetorical organization of the writings. Therefore, these methods generally failed to reflect the contextual and meaning-oriented writing features. Considering the aforementioned issues, it seems that the role of a human remains important in L2 writing instruction in computer-based environments, which has surprisingly been neglected in AWE programs. To address this aim, automated tools are suggested to be

implemented in conjunction with human evaluation to capture the distinctive differences of learners.

Blog-based Writing Systems

Beginning in the late 1990s, the instructors started employing blogs as a teaching tool for a variety of academic subjects including L2 teaching. Previous studies regarding the use of blogs in language education, particularly blog writing, support the conclusion that the use of blogging by EFL practitioners has the potential to promote effective writing instructions. Very recently, in order to examine any usefulness that learners may find in blog-based activities and any notable development in EFL writing, Arslan and Şahin-Kızıl (2010) conducted a study in which 50 intermediate English learners at a Turkish university were split into a control group receiving in-class writing instructions and an experimental group integrating blogs into their writing processes. The findings of this study indicated that blog-integrated writing instructions were among the optimal alternatives for writing courses on account of the greater development observed in the writing performance of language learners. Furthermore, for the purpose of providing more empirical evidence regarding the relationship between blog uses and writing instructions, in, Ting (2015) intended to analyze the English writing performance of 65 Taiwanese college students after comparing a blog-based English writing project in contrast to learners subjected to conventional writing instructions. The results indicated that blogging significantly improves the writing performance. Therefore, the findings of both reports demonstrated that the application of blogs in the writing programs of language learners outperformed those who received traditional writing instructions, especially in areas such as content and organization.

As mentioned above, there seems to be a general consensus about the effectiveness of blog-based instruction in the writing performance of learners in terms of content and organization. It should, however, be noted that the informal nature of blogs may be perceived as somehow incongruent with serious academic endeavors. Moreover, due to the

creativity and subjectivity associated with blogging activities, the written outcomes are difficult to assess.

Software-based Writing Systems

As researchers became more aware of the effectiveness of technology in education, they turned their attention toward the inspection of the value of software-related learning activities in EFL teaching. For instance, Ayres (2003) published a paper in which he described the procedure of scoping, designing, and delivering an online academic writing course offered completely over the web for candidates of the IELTS exam in New Zealand to develop both writing proficiency as well as awareness of the test format and requirements. However, this research focused on the challenges and strategies for the creation and evaluation processes of the online course, without discussing the effectiveness of the system on candidates' actual performance. Five years later, Kuo (2008) reported the design and implementation of another online writing system as a learning support for non-native Taiwanese learners throughout their writing process. In this study, the author utilized peer review as a type of revisionary support along with e-portfolios to represent the writing progress of students. The system was considered to be of great use to students in terms of learning aids; however, it should be noted that feedback from teachers is an essential component of learning since students generally prefer to receive feedback from teachers than peers. More recently, Lo, Liu, and Wang (2014), developed EJP-Write, a Chinese-interfaced writing system for English academic writing based on genre-based writing instructions to foster the process of journal writing. The authors aimed to evaluate both the content effectiveness and functionality of the developed system. The outcomes showed that EJP-Write can play a crucial role in equipping students with the learning materials needed for the specific genre of journal writing; however, further research needs to be conducted to provide more insight into the actual writing outcomes of students after the application of the writing system. In the same year, Yeh (2014) traced the development of the writing ability to three different versions of the research proposal of 16 Taiwanese students by

using an online writing system in order to investigate how the developed online system can contribute to the implementation of genre knowledge to the academic writing of students and, according to the research results, students indicated significant developments in their writing production. Although the study of Yeh offered a comprehensive view regarding the efficacy of the online system on the overall academic writing performance of students, the author calls for the implication of the system over a broader range of population from different language proficiency levels, which is the motivation behind the present study.

Writing Systems in Iran

In the language learning context of Iran, several attempts have already been made to explore the perceptions of Iranian EFL learners with respect to computer-based activities (e.g., Marandi, 2002; Latif & Lotfi, 2007; Rahimi & Yadollahi, 2010). Nonetheless, a few studies have been reported, which provide detailed analysis on developing and applying online writing programs to facilitate the writing process of EFL learners. For example, Marandi and Nami (2012) conducted an experimental research to demonstrate how web-based writing resources can enhance the degree of coherence in the English essays of 40 female Iranian learners. Randomly divided into control and experimental groups, the control group received traditional book-based treatment and the experimental group provided an educational website designed for providing EFL learners with instructions related to the concept of coherence. Regarding the obtained results, a statistically higher frequency of coherence indicators was observed in the essays of the students working with computer-aided writing lessons in comparison to book-based treatment. Even though the findings of this study increased the knowledge with regard to the potential of applying web-based writing materials on the quality of writing of Iranian learners, the website was mainly focused on the introduction of the concept of coherence, without taking the other various aspects of the writing skill into consideration.

Considering the identified research gaps and the findings of prior reports in the literature, it is a requirement to conduct further study for a variety of Iranian learners from different language proficiency levels in order to investigate their progress in developing writing abilities after the application of technology-based writing intervention. Therefore, this study claims its originality in the application of an online writing system in the context of Iranian EFL in order to find out whether a software program can lead to a significant growth in the quality of written-work production.

Method

Participants

A total number of 68 undergraduate students of the General English language course studying at Sharif University of Technology were requested to participate in this study. First, their English language proficiency was assessed by a language-proficiency test, including questions of one of the latest versions (2016) of the official TOEFL iBT test, which is provided by the Educational Testing Service (ETS). The proficiency test consisted of 80 reading, writing, speaking, and listening questions. The Cronbach's alpha indicated that the English language proficiency test had an acceptable level of reliability (0.78) in the context of this study.

Among all 68 participants, 33 students with proficiency test scores above the mean (M = 37.78, SD = 11.804) were assigned to participate in the main study. For the purpose of this study, students with scores below the mean were chosen to be left out of the experiment. There were two reasons behind this decision: first, writing belongs to the category of productive skills as students require the active production of a language; second, according to the ACTFL Proficiency Guidelines (2012), there is little evidence of functional writing skills for novice writers. Out of the 33 participants, three did not wish to participate; so, a final number of 30 students participated in the main study. All of the participants were native speakers of Persian and each of them had been exposed to a minimum of four years of formal EFL instruction at high school. Their age ranged from 17–23. Of the participants, twenty-eight

were male (93.3 percent male), with a mean age of 19 years, and two were female (6.7 percent female), with the same mean age of 19 years. In the next step, the participants were assigned to three different levels of English language proficiency based on their proficiency test scores as well as descriptions suggested in the writing section of the ACTFL Proficiency Guidelines (2012). Participants with scores ranging between the mean and half a standard deviation above it were considered as intermediate-low learners (10 students), students with the proficiency scores ranging between (mean+ 0.5 SD) and (mean + SD) were labeled as intermediate-high learners (9 students), and students with scores above (mean + SD) were considered to be advanced learners (11 students).

Materials

In the next phase, an academic writing website considering the premises of computer-assisted language learning (CALL) with the URL www.genre-basedwriting.com was designed and developed as a learning tool. A general overview of the planning and developing procedure of the online writing system in terms of both technical and content organizations followed from this.

Regarding the technical specifications, this application has been developed following the Service Oriented Architecture (SOA) principals. For the presentation layer, it is using a platform agnostic stack, namely HTML5, CSS3, and AngularJS. The AngularJS controllers are communicating with an API through AJAX calls and the API has been developed using ASP.NET Web API. This API then hits endpoints of a WCF service through hand written proxies to provide the maximum security. As the programming language of choice, C# is being used throughout different layers. For storing the application data, Microsoft SQL Server has been utilized as a relational database.

With regard to the content of the system, considering the functions and features of an online writing system named *WRITeam* which was developed by Yeh (2014) as well as the genre-based teaching approach to academic writing, a plan for an academic writing course was carefully designed and developed based on the framework of the CARS

model. This model is a three-move structure proposed by John Swales (1990), including establishing a territory (situation), establishing a niche (problem), and occupying the niche (solution) that was introduced to the participants in order to describe the organizational pattern of writing for academic contexts (see Figure 1). Each move, defined as the information structure or rhetorical function by Swales (1990), consisted of different steps as well as certain explanations and examples related to the steps of each move were provided for users in the system (see Figure 2). The writing guidelines offered in this section were designed in a way to help the students raise awareness of the structure of academic writing. Moreover, in the process of developing the system, all the necessary options for designing a CALL software proposed by Beatty (2003), including user-friendly navigation options as well as help buttons, were taken into account so that learners feel comfortable about navigating around the environment in the application. It is noteworthy that although John Swales' CARS model (1990) was originally introduced for structuring the introduction of an article; he pointed out that the model can be applied both in the introduction of a piece as well as on a larger scale throughout the research paper, proposal, or document. Thus, the content of the website, including instructions, examples, and hints are designed in a way that can help users look at the overall structure of an academic essay.

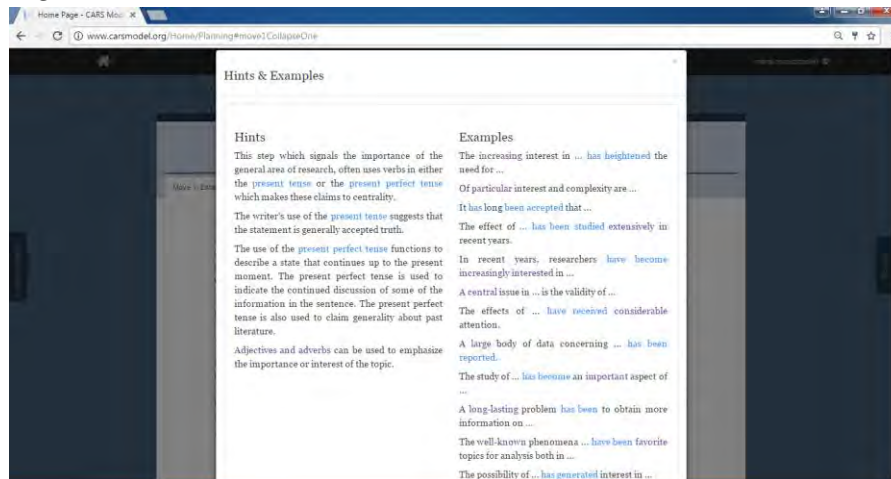*Figure 1.* A screenshot of CARS model, move 2.

Figure 1. A screenshot of hints & examples.

Procedure

During a period of eight weeks, the participants were required to produce eight pieces of writing that reflect the application of the CARS model. Composing their writings, the students reflected on what they had learned considering various moves and steps of the CARS model. At this stage, they were provided with all the required technical writing and editing tools in the system in order to make the creation quite simple (see Figure 3). At the end of each week, the researcher commented on the texts and provided the participants with personalized feedback as well as suggestions related to their mistakes in order to help them improve their writing proficiency. Then, the pieces of writing with comments were sent back to the participants for revision. Through the function of this system, which saved the produced texts for further review and analysis, learners were able to witness all their previous work with comments posted by the researcher. The participants were encouraged to read the feedback comments posted by the researcher on their first draft of writing and apply them to their following work. Thus, in an eight-week period, eight versions of writing were produced by each participant.
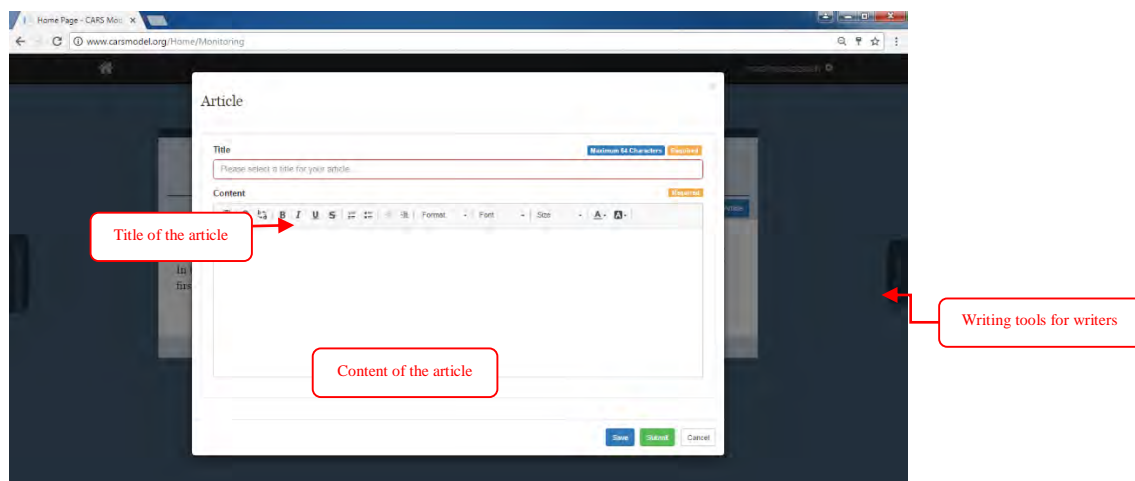
*Figure **Error! No text of specified style in document.**3.* A screenshot of the section "write new article".

Results

To investigate the effect of an online writing system on the writing ability of Iranian university students in an academic context, eight versions of writing were produced by each student during a period of eight weeks. At the end, participants' writings were rated by the researcher and an independent rater. Inter-rater reliability which is a measure of the consistency of two raters was calculated to be 0.91. For investigating the differential effects of the writing system on the students' writing scores, first, the mean of ratings of the two raters was computed for each student in each writing task.

For investigating the differential effects of the writing system on the students' writing scores, first, the mean of ratings of the two raters was computed for each student in each writing task. Then, the mean of each student's performance in eight writing tasks was computed due to the similarity of tasks across times and forms. Finally, the one-way analysis of variance (ANOVA) was conducted to check whether the means of students' writing performance in eight revised versions were different in different groups of intermediate low (IL), intermediate high (IH), and advanced (AD). It should be said that assumption of normality of ANOVA was investigated and it was satisfied because of the skewness and kurtosis measures were between -2 and +2 (see Table 1). Moreover,

the assumption of homogeneity of variance was tenable due to a non-significant Levene's test of homogeneity of variance, $F = 1.20$, $p = .13$.

Table 1
Descriptive Statistics of Students Scores in all the Groups

	N	Mean	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
WRTING	30	19.37	7.39	.28	.42	-1.22	.83

The descriptive statistics of students' writing performance are presented in Table 2. The results of one-way ANOVA (see Table 3) showed that there was a statistically significant difference among students' writing performance across different groups of IL, IH, and AD proficiency levels, $F (2, 27) = 67.09$, $p = .00$. So, in each one of the three proficiency groups, the null hypotheses was rejected and it was indicated that the online writing system had a significant effect on Iranian university students' EFL writing performance across different proficiency levels of IL, IH, and AD.

Table 2
Descriptive Statistics of Students' Writing Scores across Different Groups

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
IL	10	16.63	.82	.25	16.04	17.21	14.94	17.69
IH	9	18.75	1.33	.44	17.72	19.78	16.75	21.38
AD	11	22.38	1.24	.37	21.55	23.22	20.50	24.19
Total	30	19.37	2.71	.49	18.36	20.39	14.94	24.19

Note. IL= Intermediate Low group, IH = Intermediate High group, AD = Advanced group

Table 3
The Analysis of Variance of Groups (ANOVA)

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	178.47	2	89.23	67.09	.00
Within Groups	35.91	27	1.33		
Total	214.38	29			

To locate the differences across groups, Post hoc Bonferroni statistical test was utilized. As shown in Table 4, the first difference was between IL and IH groups, IH (M = 18.75, SD = 1.33) outperformed IL (M = 16.63, SD = .82). The second difference was between IL and AD groups, AD (M = 22.38, SD = 1.24) outdid IL (M = 16.63, SD = .82). Finally, AD (M = 22.38, SD = 1.24) group was better than IH (M = 18.75, SD = 1.33). So, the results of the current study affirmed that using the online system has enhanced learners' writing skills, particularly for those at the advanced level of English language. Moreover, this implies that learners' proficiency level affects the application of computer-supported instructions throughout the writing process.

Table 4
Post hoc Bonferroni's Results

(I) Proficiency Level		Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	Upper Bound
IL	IH	-2.12*	.52	.001	-3.47	-.77
	AD	-5.75*	.50	.000	-7.04	-4.46
IH	IL	2.12*	.52	.001	.77	3.47
	AD	-3.62*	.51	.000	-4.95	-2.30

AD	IL	5.75*	.50	.000	4.46	7.04
	IH	3.62*	.51	.000	2.30	4.95

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

It is also of particular note that the effect size for mean differences indicated from the Eta-squared is reported to be 0.83 showing that 83% of the total variance in writing scores is accounted for by the eight-week writing program.

A mixed between-within subjects analysis of variance was conducted to assess the effect for time as well as the impact of three different proficiency levels (IL, IH, and AD) on participants' scores on their writing, across eight time periods.

There was no significant interaction between proficiency levels and time, Wilks' Lambda = 0.63, F (14, 42) = 0.77, P = 0.70, There was a substantial main effect for time, Wilks' Lambda = 0.026, F (7, 21) = 111.7, $P < 0.0001$, with three levels showing an increase in writing test scores across the eight time periods (Table 1). The main effect comparing the three proficiency levels was also significant, F (2, 27) = 67.09, $P = < .0001$, suggesting difference in the three proficiency levels. The schematic representation of students' writing performance in each of eight weeks in three proficiency levels was also given in Figure 1.

Table 5

Writing Scores of the Three Proficiency Levels (IL, IH, AD) Across Eight Time Periods

	IL			IH			AD		
	n	Mean	SD	n	Mean	SD	n	Mean	SD
Time 1	10	13.75	1.11	9	15.94	1.52	11	19.36	1.16
Time 2	10	14.35	.91	9	16.72	1.69	11	19.86	1.09
Time 3	10	15.15	.91	9	17.44	1.75	11	21.09	1.28
Time 4	10	16.30	.94	9	18.22	1.22	11	21.86	1.53

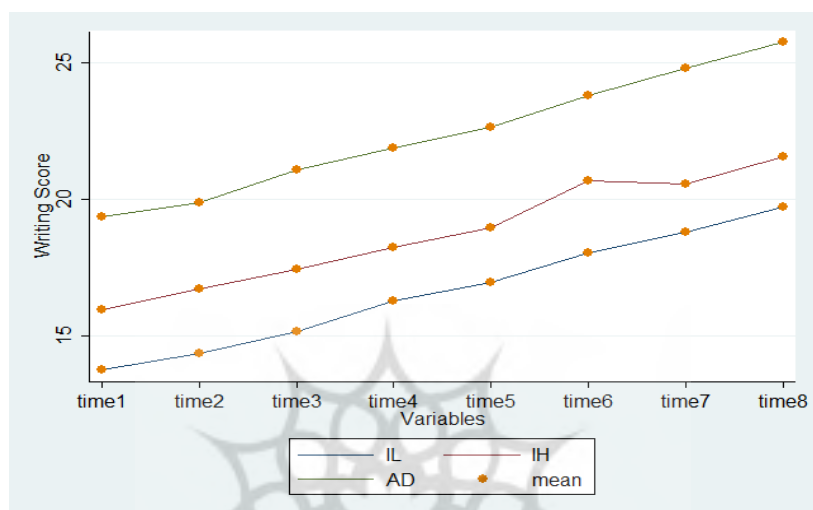|									
Time 5	10	16.95	.89	9	18.94	1.55	11	22.63	1.77
Time 6	10	18.05	1.32	9	20.66	3.40	11	23.77	1.61
Time 7	10	18.08	1.05	9	20.55	1.60	11	24.77	1.36
Time 8	10	19.70	1.00	9	21.55	1.28	11	25.72	1.25

Figure 1. The means of students' writing scores in each of eight weeks in three proficiency levels.

So, across the three proficiency groups, the null hypothesis was rejected and it was indicated that the online writing system had a significant effect on Iranian university students' EFL writing performance across different proficiency levels of IL, IH, and AD. The results of the current study affirmed that using the online system has enhanced learners' writing skills, particularly for those at the advanced level of English language.

Discussion

The analysis of the results suggested that the developed online writing system played a vital role in improving the learners' writing skills. According to the results, there was a significant difference between the mean scores of students in the writing program. In other words, the

utilization of the online writing system has noticeably enhanced the writing abilities of students. In the following section, these results, in light of the questions posed earlier, have been discussed as follows:

One possible explanation for the effective integration of an online program in teaching English writing is a result of the fact that computers allow each learner to perform in accordance to his/her own pace. The user may move from one step to another based on his/her needs. This is a characteristic of a CALL program that enables learners and educators to take into account the specific differences of individuals. For instance, a student with lower writing abilities requires more time for writing, whereas learners with higher skills write quickly. In a CALL setting, learners with lower writing abilities do not need to try hard to keep pace with the learners of higher abilities in writing; it generates a learning process that is more collaborative than competitive. Therefore, the CALL software provides the learner with a choice of pace over his/her learning and this may be one of the many factors that are responsible for the substantial development in the writing performance of students.

Furthermore, another reason for a significant improvement in the writing scores of learners throughout the period of eight weeks arises from the presumption that in a CALL program, learners are free from time and place, which are two constraints in conventional classrooms. The CALL program is a non-threatening setting that assists learners to create texts freely outside the limitations of the classrooms. The absence of time restrictions helps learners to write and review their produced texts at anytime and anywhere they desire and they are able to gain a better understanding of the lesson in their chosen path. This enables students to become active, responsible, and autonomous learners, and leads to more student-centered learning as well as greater engagement in the process of establishing and developing writing skills. The utilization of CALL throughout teaching gets learners actively involved in the learning process and can help them acquire confidence in directing their own learning. Therefore, on the basis of a theoretical framework of learner autonomy, CALL can be used to promote autonomous learning. This is also in accordance with Celce-Murcia and

McIntosh (1991), who attributed the advantage of language learning activities with computers to the nature of interaction that the learner has in relation to the computer that brings about a more learner-centered approach.

Furthermore, in order to make this significant enhancement in the learners' mean scores plausible, the fact that the learners benefited from the availability of a variety of language-learning sources on the Internet can be considered. Technology provides students with additional materials at the touch of a button. This indicates that during their writing process in a CALL environment, learners can seek out related articles, use online dictionaries, utilize facilities such as spelling check and grammar check, and analyze sample texts to highly motivate them. Every one of these features of the Web as well as the quickness and ease of access to online materials and the required information can reduce the physical effort spent on writing and can provide foreign language learners with more innovative and lively methods to practice their writing skills; therefore, the writing process becomes more dynamic and less irritating, if learners enjoy themselves while writing, it probably affects their writing positively.

Moreover, such findings may construct significance around the fact that in the age of the Internet, the new generation of language learners is more accustomed to online communication. They are familiar with technology, since, presently, learners utilize the Web in various contexts. This type of interaction may, in the long run, have increased the computer literacy of learners and have made them more comfortable with computer-based instructions. Therefore, the students appear to be more digitally competent and, consequently, their technological expertise has influenced their use of computers for improving English writing.

Yet, another possible reason for substantial positive changes in the mean scores of learners was a result of the fact that computer applications apply the "learning by doing" method. In the developed CALL environment, learners utilize the computer services, online products, and broad guidelines to produce texts; this means that through

technology, they do things with the language, rather than just learn about the language. In other words, through the course of study, by using the medium of technology, knowledge is constructed, rather than transferred. Thus, software programs can be used to effectively support the developmental process of learning and lead to higher quality in written assignments.

Another plausible explanation for the constructive effect of the online system on English writing is that receiving feedback in a CALL setting is more effective. While using computers, learners can easily receive individualized and comprehensive comments on their work and use technological services to collaborate with the instructor at the exact same time. In addition, within a classroom framework, the instructor cannot respond to the diversity of the needs of learners, whereas a CALL setting can help the teacher provide learners with a type of feedback that they might require to correct their individual problems. The archive function of the CALL application also permits learners to review their feedback at a later time and can encourage them to revise their documents and boost their scores. This is also in line with Tuzi's (2004) study, which concluded that having feedback written in the electronic format influenced the writing process of students and assisted them to concentrate on the strengths and weaknesses of their writing.

By comparing the outcome of the current research with the results of the reports mentioned earlier, it has been discovered that this study is consistent with certain previously conducted research. The findings correspond to the results of the previous reports (Yeh, 2014), showing that "an online program enabled reflective learning, which teacher-led classroom instruction often fails to encourage" (p. 16). It stressed that an online writing system assists student-writers in applying academic genre-based knowledge to their writing and thus improves their writing ability. In addition, the findings of this study are consistent with those of previous reports by Lo, Liu, and Wang (2014), which proposed that EJP-Write, a Chinese-interfaced writing program for English academic journal writing, was effective in teaching genre and supporting journal

writing in a user-friendly environment due to the different varieties of support and examples presented through computer-assisted functions.

Likewise, the outcome of the analysis performed by Marandi and Nami (2012) ensure the effectiveness of applying technology in Iranian educational settings. These findings enhanced knowledge with respect to the potential of using web-based writing lessons in the writing quality of Iranian learners, which were in lines with the conclusions of the current study.

To overcome the limitations of prior reports (e.g., Yeh, 2014), this study makes a unique contribution to the field: it examined the extent to which EFL learners of various proficiency levels were able to use computer-assisted functions to reinforce the application of online instructions in their writing and enhance their scores, rather than failing to take into account the differences in language proficiency levels. The results revealed that the impact of the system differs according to the proficiency levels of the participants. The findings offer evidence that suggest that intermediate-high learners outperformed intermediate-low students, and that advanced learners outdid both intermediate-low and intermediate-high learners and they were more accurate in their compositions. In the following section, some assumptions for the observed variations in the mean scores between the lower proficiency levels and higher proficiency levels have been mentioned as follows:

First, the differences in the mean scores between the lower proficiency learners and the higher proficiency learners could be anticipated since it was in line with the Linguistic Threshold Hypothesis of language proficiency (Cummins, 1979); learners will need to develop a certain level of proficiency in the target language before they can transfer L1 skills or strategies to improve their L2 language. Therefore, learners at a lower level of proficiency relied more on their L2 language knowledge to facilitate their L2 process, whereas advanced students, considering the influential features and functions of an online writing system as well as individualized feedback that facilitated the process, transferred their L1 skills and strategies to the L2 language and

improved their writing scores to a greater extent in comparison to learners with lower English language skills.

Second, higher mean scores of learners with higher levels of L2 proficiency might be attributed to their higher ability in working with computers for language learning. Owing to the higher levels of L2 knowledge, advanced level learners could have already benefited more from online language programs and multimedia components and, consequently, become more competent in applying technology for language learning. This may help them perform better in the context of this study.

In line with the outcome of this analysis, the following implications for the integration of CALL programs into L2 classrooms and the teaching of L2 writing are presented:

First, this study takes a step forward in terms of how to think of computer-based activities and their effectiveness in the process of the teaching and learning of academic writing skills. The clearest indication provided by the current study was that CALL-based programs, if they were designed based on the pedagogical perspective and firmly integrated into writing courses, have the potential to become rich educational instruments and powerful learning environments. Instructors can provide various learning opportunities by applying a multitude of technology-based activities to concentrate on increasing the EFL writing skills of learners. It can benefit educational policy makers to come to a better understanding of the conditions under which technology can be utilized to boost EFL writing. Educators can try to maximize the opportunities offered by technology in their classrooms. Furthermore, this research presents variable insights for EFL instructors to improve the academic writing performance of learners at various English language proficiency levels by providing evidence of whether and how higher proficiency learners build their competence in EFL writing in comparison to lower proficiency learners. An additional benefit of the outcome is that online feedback has been an effective part of the learning environment. It reinforced the learners' efforts to boost their writing skills. Thus, instructors can use individually tailored

feedback as an effective technique to be utilized in online writing lessons in order to encourage students to revise their writings.

Suggestions for Further Study

This research has offered certain recommendations for how research and practice in the field of CALL may be carried out in order to be of optimum benefit to language teachers and instructors who desire to implement technology successfully within their EFL-writing classrooms.

For future work, the extension of the study reported here can be proposed in two directions. First, the effect of CALL programs can be analyzed for EFL learners from different fields of study or different learning styles. Next, a combination of both qualitative and quantitative analysis of the online activities of students for a better understanding of the effect of computer-based instructions on EFL learners' writing achievement can be planned.

Moreover, according to Grgurović, Chapelle, & Shelley (2013), professionals in CALL have argued that the value of technology for second language learning cannot be studied merely by comparing technology-assisted learning with traditional classroom instruction. So, this study will serve as a base for future researchers to bear in mind that comparing computer-assisted learning with non-computer-assisted learning is no more beneficial; what is now needed includes more studies involving technology-based materials, developed based on pedagogical education in the EFL context in order to provide a richly supportive environment. As Warschauer (2000) pointed out, "Let us view neither the computer nor English as ends in themselves, but rather as complementary tools that our students can use to read the world, to write it, and to rewrite it" (p. 66).

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