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Effect of computer-supported collaborative learning (CSCL) on students' essay writing skills and their attitude toward e-learning

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Abstract
Computer-supported Collaborative Learning has been the focus of investigation in the field of foreign language learning for many years. This study aimed to investigate the impact of learning through blogging on the students' essay writing skill and attitude. A total of 96 students from a Technological university were assigned to the study and were divided into 2 groups of experimental (bloggers) and control (regular) groups. They were instructed in two different methods by using different teaching methodologies. The bloggers, the experimental group students, did not receive any direct teaching; in fact, they received the lessons through weblogs. The findings showed that blogging had a significantly better effect on the learners' writing skill improvement than the regular class. Also, a semi-structured interview was conducted to investigate the perceived usefulness, perceived ease of use, actual use of web and the students' attitude toward blogging, whose results demonstrated that the students' attitudes and feelings can be reshaped as a result of exposure to e-learning.

Keywords: Computer-supported, collaborative learning, *blogging*, *e-learning*, *essay writing*.

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Introduction

Technological development in recent years has strongly affected language learning and teaching practice. Consequently, computer-supported collaborative learning (CSCL) by means of Internet applications like weblogs has recently become the focus of many investigations. According to Stahl, Koschman and Suthers (2006, p. 409), CSCL is defined as a teaching approach wherein learning occurs through social interaction utilising a computer or through Internet. This type of learning is featured by the 'sharing and construction of knowledge' where students make use of technology as their main channel of communication or as a shared means. Likewise, in language pedagogy weblogs have been used to improve different linguistic skills like reading and writing since blogs can offer numerous advantages to language learners (Ducate & Lomicka, 2008). Lin (2015) believed that blogging has been among the most widely used applications for teaching and learning second or foreign language. For numerous reasons blogs have been used in the field of second language teaching: to help the students communicate with their peer students and the teacher, to publish the students' writing, to have group discussion, to comment on the students' writings and receive feedback from others, etc. (Churchill, 2009). According to Marzban and Faezeh (2016), the majority of Iranian learners have difficulty in essay writing skills in the English language. There might be a plethora of reasons for this problem, the most remarkable of which might be that the skill has not been appropriately addressed by the educators neither in the learners' L2 and nor even in their mother tongue. It is worthy of noting that previous research studies show a strong correlation between L1 and L2 literacy skills (see Harley, Cummins, Swain & Allen, 1990; Pae, 2018; Sparks, Ganschow & Patton, 2008; Sparks, Patton, Granschow & Humbach, 2009; van Gelderen, Schoonen, Stoel, Glopper & Hulstijn, 2007). Thus, finding strategies that could efficiently compensate for this shortcoming that afflicts many L2 learners – at least in the Iranian context of situation – has been the focus of a multitude of research studies from the distant and recent past. One of the strategies that has attracted applied linguists to cope with the problem, is the use of CSCL and technology-based tools, such as computers and weblogs. For instance, in recent years some researches have been conducted on the effect of weblogs on language learning and teaching (Al-Qallaf & Al-Mutairi, 2016; Arslan & Sahin-Kizil, 2010; Bakar & Latif, 2010; Gedera, 2011; Hsu & Wang, 2010; Richardson, 2009; Sulistyo, Mukminatien, Cahyono & Saukah, 2019; Tse, Yuen, Loh, Lam & Ng, 2010; Zarei & Hussin, 2014). The theoretical framework of constructivism has been invoked as an important support for the (CSCL) and weblog-based instructional strategies which often embrace the employment of cooperative learning groups, a constructivist-based practice reverenced for the contribution that social interaction can make to learning. Vygotsky (1978) elucidated the relation of cognitive processes and social activities which led to the sociocultural theory of development; it contends that learning occurs when students solve problems that are beyond their current cognitive abilities with the help and scaffolding of their instructor or peers. Thus, CSCL approaches that encourage activities that include group work, leveraging peer-to-peer or peer-to-instructor interaction to promote students development of abilities beyond their current level are based on a sociocultural branch of constructive learning theory. Blog which is a short substitute for weblog is among the most attractive Web 2.0 tools. Essentially, it lets users make personal journals and resource sites to communicate their ideas with their community (Makri & Kynigos, 2007). Blogs can also boost learners' involvement in class activities and build up a stronger sense of community and belongingness to the class which is essential for the learners in online contexts of education (Bold, 2006; Williams & Jacobs, 2004). Sense of community can be defined as 'a feeling that members have of belonging, a feeling that members matter to one another and to the group, and a shared faith that members' needs will be met through their commitment to be together' (McMillan & Chavis, 1986, p. 9). According to Taki and Fardafshari (2012), writing skill is essentially an interactional and

communicative activity; therefore, weblogs can be considered as the best tool for improving the writing skill. Likewise, Deng and Yuen (2011) strongly suggested that weblogs are reflective and collaborative tools that are affordable and help the students to have reflective thought. Also, Wang, Huang, Jeng and Wang (2008) believed that blog-centered learning can help the learners to receive information in a short time.

Moreover, one of the key factors that can play a very important role in the acceptance of technological tools is the students' attitude toward CSCL. According to Teo (2006) the learners' attitude toward CSCL can be considered as an important factor in the acceptance and future usage of the technological tool in the process of learning. Furthermore, Woodrow (1991) emphasised that by investigating the students' attitude toward CSCL one can assess the suitability and practicality of computer courses. To investigate the students' attitude toward CSCL, some models have been developed and used, the most popular of which is the Technology Acceptance Model (TAM). McCoy, Galletta and King (2007) asserted that TAM was developed to investigate the adoption and usage of information system. In the current study, TAM was used to investigate the learners' attitude toward blogging.

Although there are many studies that refer to various benefits of CSCL, some researchers have proved that they can have some potential disadvantages too (e.g. Coleman, Pettit & Buning, 2018; Dickey, 2004; Lin, 2014; Nardi, Schiano, Gumbrecht & Swartz, 2004; Strampel & Oliver, 2008; Walinski, 2005). Consequently, some further studies are needed especially in the Iranian context to probe into the issue of whether to use CSCL and other technology-based methods of language teaching in general and writing skill in particular. To meet this end, a type of quasi-experimental study was conducted to answer the research questions that follow:

1. What is the effect of CSCL on students' essay writing skills?

2. Which of the instructional approaches is more effective, the CSCL, or the regular writing course?

3. What is the effect CSCL on the learners' attitude toward *e*-learning?

1. Methods

1.1. Research design

The methods and procedures which were used in this research can be defined within the framework of quasi-experimental research design. To conduct this study, a copy of the TOEFL iBT test was used as the primary instrument to measure the students' proficiency level. According to the proficiency test scores, 96 students were assigned to the study from 4 English classes. Then, they were randomly assigned to the experimental and control groups. Before the treatment, a writing pre-test was taken from both the experimental and the control groups; to this end, they were asked to write an essay on a proposed topic. In the next step, the experimental group was introduced to the CSCL approach, and they were guided as to how to make their weblogs, and how to comment on their peer-student writing tasks. Twice a week the students were required to study the instructors' weblog and write two essays on the proposed topics, and then post them on their weblogs. In the end, their peer

students read the essays and put corrective comments on their them, and the instructor commented on them, as well. After eight sessions and writing six essays, a post-test was taken to be compared with their pre-test.

Likewise, the students in the control group were supposed to attend the writing classes and participate in the class activities; in fact, they experienced the regular form of instruction. Each session, different types of essays were taught to the students of the control group, and the hard copy of the Power Point slides which were displayed in the classroom was given to them to make use of them. Finally, they were supposed to write two essays each week, and their essays were corrected by their instructors. After eight sessions, a post-test was taken to be compared with their pre-test.

1.2. Participants

The participants of this study consisted of 96 Iranian male and female freshman engineering students in Sharif University of Technology, Tehran, Iran. After the participants took part in the proficiency test, they were randomly assigned into two groups of the experimental group, and the control group.

1.3. Instruments

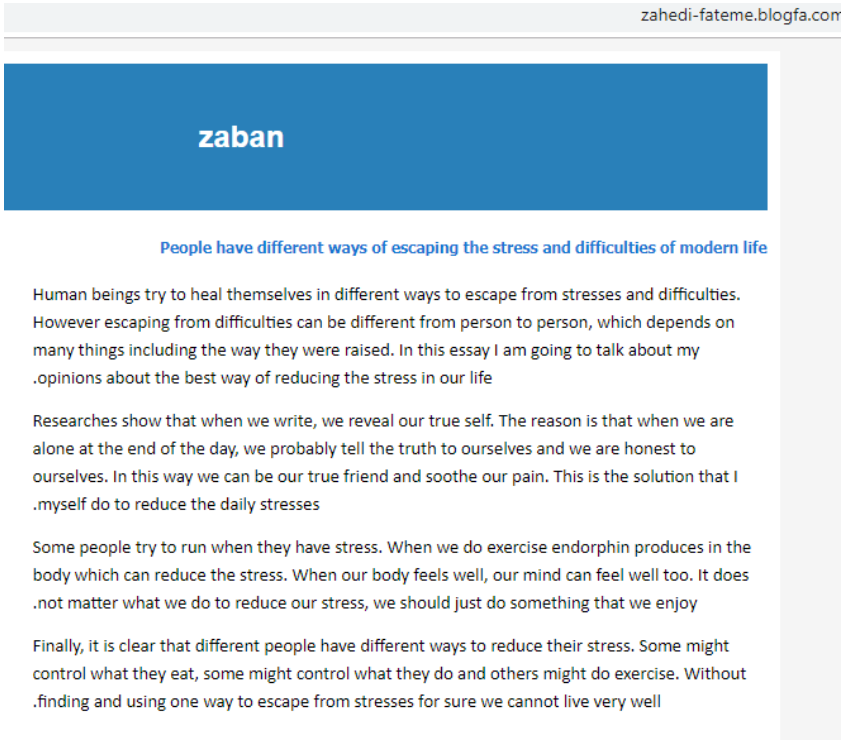
To serve the objectives of the current research three tools were utilised: a proficiency test, a free blogging server, and an interview.

1.3.1. TOEFL iBT

As the researchers tried to investigate the impact of CSCL on the students' writing skill, two crucial attributes were analysed by using TOEFL iBT. The first one was the students' proficiency level and the second one was the students' familiarity with computer. In the current research the student's computer knowledge was essential since half of the participants, i.e., the experimental group students, were supposed to receive all their lessons through weblog; furthermore, they were required to read their peer-students essays, and put comments on them. Thus, the first instrument which was implemented in the current research was the TOEFL iBT test. TOEFL iBT consisted of 42 reading questions, 34 listening questions, 5 speaking questions, and 2 writing questions. The test was taken from students at a language laboratory; in fact, one of the versions of TOEFL iBT was installed on their computers, but because of the shortage of time these tests were taken in 4 subsequent sessions from the students. The internal consistency of the scores produced by the TOEFL iBT turned out to be 0.85.

1.3.2. Free blogging system

Free blogging system was used to investigate the impact of CSCL on the students' writing skill and attitude. After assigning the students into two groups of experimental and control groups, they were introduced to the blogging system. Then, they were instructed as to how to make a personal web page, how to do their assignment, post them on their weblogs, and how to comment on their peer students writing assignment. The following figures are the screenshots of the students and instructors' weblogs:


zahedi-fateme.blogfa.com

zaban

People have different ways of escaping the stress and difficulties of modern life

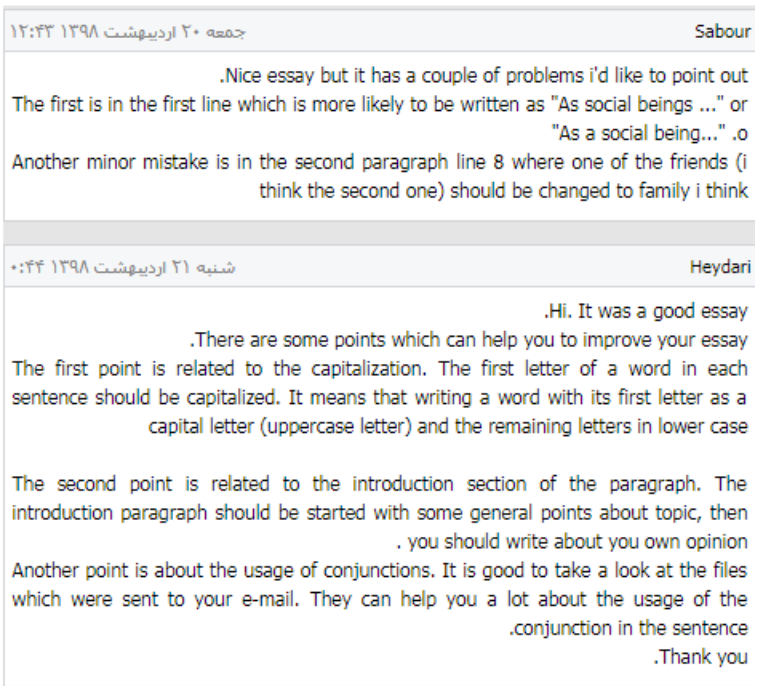
Human beings try to heal themselves in different ways to escape from stresses and difficulties. However escaping from difficulties can be different from person to person, which depends on many things including the way they were raised. In this essay I am going to talk about my .opinions about the best way of reducing the stress in our life

Researches show that when we write, we reveal our true self. The reason is that when we are alone at the end of the day, we probably tell the truth to ourselves and we are honest to ourselves. In this way we can be our true friend and soothe our pain. This is the solution that I .myself do to reduce the daily stresses

Some people try to run when they have stress. When we do exercise endorphin produces in the body which can reduce the stress. When our body feels well, our mind can feel well too. It does .not matter what we do to reduce our stress, we should just do something that we enjoy

Finally, it is clear that different people have different ways to reduce their stress. Some might control what they eat, some might control what they do and others might do exercise. Without .finding and using one way to escape from stresses for sure we cannot live very well

Figure 1. The example of one of the participants' essay on her weblog


Sabour جمعه ۲۰ اردیبهشت ۱۳۹۸ ۱۲:۴۳

.Nice essay but it has a couple of problems i'd like to point out
The first is in the first line which is more likely to be written as "As social beings ..." or "As a social being..." .o
Another minor mistake is in the second paragraph line 8 where one of the friends (i think the second one) should be changed to family i think

Heydari شنبه ۲۱ اردیبهشت ۱۳۹۸ ۰:۴۴

.Hi. It was a good essay
.There are some points which can help you to improve your essay
The first point is related to the capitalization. The first letter of a word in each sentence should be capitalized. It means that writing a word with its first letter as a capital letter (uppercase letter) and the remaining letters in lower case

The second point is related to the introduction section of the paragraph. The introduction paragraph should be started with some general points about topic, then . you should write about you own opinion
Another point is about the usage of conjunctions. It is good to take a look at the files which were sent to your e-mail. They can help you a lot about the usage of the .conjunction in the sentence
.Thank you

Figure 2. The example of peer-students' comments

1.3.3. Interview

In this research a semi-structured type of interview was used. The semi-structured interview, which is a combination of the unstructured and structured-interview, is a type of interview in which the interviewees are asked some pre-organised or pre-planned questions; furthermore, some other additional questions can be asked in the course of the interview if the need arises based on the exigencies of the dialogue with the participants to probe more deeply into the participant's ideas and feelings by the interviewer. For this purpose, the students were asked 18 pre-organised questions which were further divided into 5 sections. The main constructs of the interview consisted of perceived usefulness, perceived ease of use, attitude toward CSCL and actual use of the web. Furthermore, each construct consisted of some additional components, for instance, effectiveness, productivity, usefulness, and pace were among the components of perceived usefulness. Perceived ease of use consisted of easiness in accomplishing the tasks, interaction with the peer students and the usage of weblogs. The students' feelings toward CSCL, and *e*-learning in general was the component of the third construct. To estimate the actual use of the web, the duration of time that the students used the weblogs was estimated. Before starting the interview, the researchers explained the goals of the interview and they were informed that the interview would be recorded for further analysis.

1.4. Scoring scale

To rate the students' writings, a type of analytic writing scale was used. 'Analytic scale dissect writing ability into subskills that are scored separately and may then be combined to generate a total score if necessary' (Thomas, 2020. p. 4). Analytic scoring scale consists of five features: content (30%), organisation (20%), language use (25%), vocabulary (20%), and mechanics (5%) (Bacha, 2001; Kashani, Mahmud & Kalajahi, 2013). The scores from each one of the subskills must be added up to calculate the total score for each writing test or practice. In fact, this type of rating can be considered as a reliable tool that can provide the researcher with information about the quality of the essays from different aspects. To check the reliability of the rating scale, a type of inter-rater reliability was calculated. To meet this end, the students' writing assignments were corrected by two raters; the first rater was their instructor and the second rater was a student of master's in TEFL at Sharif University of Technology, who was also a language instructor in one of the language schools in Tehran. In this way, both raters worked together to rate the students' essays. First the instructor, and then the second rater scored the essays. To get the reliability of the ratings, the correlation between the grades from each one of the raters on the similar writings from the two groups was computed. The average measure of intraclass correlation coefficient of bloggers was 0.933 with a 95% confidence interval from 0.880 to 0.962; F (47, 47) = 14.87; p = 0.000, and the average measure of intraclass correlation coefficient was 0.944 with a 95% confidence interval from 0.900 to 0.969; F (46, 46) = 17.98; p = 0.000.

1.5. Procedure

The first phase of data collection started with administering the TOEFL iBT. By taking this test, the students' proficiency level was examined. The scores that the students achieved in the proficiency test was the main factor for choosing them as the participants of this study; in fact, only those students who were successful in achieving scores above the mean (M = 60) were allowed to participate in this research. The main reason for choosing the more proficient students in this research was related to

the main purpose of study. In fact, the impact of using CSCL on the students' essay writing skills was the main focus of this study; therefore, the students who were more proficient could handle this type of essay writing better than the weaker students, particularly during the short period of study time. The less proficient students had more language problems which could hinder learning the writing skills which were concerned more with how to map and organise one's ideas into a coherent text. The test's maximum score was 120 which results from adding all of the obtained scores from different parts of the test. The second phase of data gathering was done by taking a pre-test. To take the pre-test, the students were required to write an essay on the proposed topic. While writing the essay the students were not allowed to consult dictionaries or other similar sources. Then, their essays were corrected and scored.

The third phase of data collection was done through the free blogging system. After randomly assigning the students into two groups of the control group and the experimental group, the experimental group was introduced to the CSCL. The researchers (instructors) prepared the lessons in advance and posted them on their weblogs. Then, each session the researcher instructors assigned the writing guidelines that the students were supposed to read and practice on a pre-specified topic. Then, the researcher instructors emailed them an exemplar essay to make them familiar with the framework of compositions. After reading the instructors' weblogs and studying the exemplar writing, the participants wrote an essay, and finally posted their essays on their weblogs. In the end, the instructors commented on the essays. Each week the participants posted two essays on their weblogs and received a score, and also the comments on each essay. As it was mentioned before, the analytic scale was used to score the participants' essays. After seven sessions a post-test was given to compare with their pre-test. As a post-test the students were required to write an essay on a proposed topic; in fact, the selected topic of the pre-test and the post-test were the same for both groups.

The students in the control group participated in a regular course of language learning twice a week. In each session, the students were taught the lessons on essay writing. In fact, they were instructed as to how to write the introduction, body paragraph, and conclusion section of an essay. Furthermore, persuasive, cause and effect, and comparison and contrast essays were taught. At the end of each session, the instructor explained the errors from their previous essays and gave them the hard copy of the Power Point slides, and the examples of the essays to make them familiar with different types of essays. At the end of the week, they submitted two essays to their instructors and the next session they received their essays with their instructors' comments on them. After seven sessions they participated in a post-test whose resulting scores were compared with those from the pre-test.

In the last phase of the data collection, the students were interviewed with reference to some open-ended questions. Before interviewing the students, they were introduced to semi-structured interview and the reasons why they were supposed to participate in the interview. Then, they were interviewed one by one and the interviews were recorded for further analysis. During the session, the students were allowed to freely talk about their opinions, experiences, and feelings toward CSCL approach and *e*-learning.

2. Data analysis

The data collected from CSCL group and regular writing class were analysed through using Statistical Package for the Social Sciences software to have accurate quantitative data analysis. To answer the first research question, paired sample *t*-test was run to compare the pre-test and post-test of each of groups. Furthermore, repeated test of measurement was performed to see if there was a significant change in the participants' scores during the course. In addition to that, repeated test of measurement revealed the comparison of the students' scores of the CSCL group and the regular class group. Then, independent sample *t*-test was run to compare the result of the two groups to answer the second research question. Finally, thematic analysis was conducted to answer the third research question.

3. Results

In this section the data analysis and the results of the study are presented and the research questions are answered. The first research question of this study was: What is the effect of CSCL on students' essay writing skills? To find a reasonable response to this question, within group comparisons were made. In line with this data analysis, pair sample *t*-tests were conducted for each group. The following tables show the results of the test:

Table 1. Paired-sample descriptive statistics of the CSCL and the regular class group

	Mean	*N*	Std. deviation	Std. error mean
Writing post-test of bloggers	19.79	48	2.54	0.36
Writing pre-test of bloggers	15.09	48	1.37	0.19
Writing post-test of class group	17.68	48	2.53	0.36
Writing pre-test of class group	15.29	48	1.21	0.17

Table 2. Paired-sample *t*-test and independent sample *t*-test results of the CSCL s and regular class group

	Paired differences					*T*	df	Sig. (2 tailed)
	Mean	Std. deviation	Std. error mean	95% confidence interval of the difference				
				Lower	Upper			
CSCL's writing	4.72	2.52	0.36	3.9	5.4	12.9	47	0.00
Regular class groups' writing	2.39	2.24	0.32	1.7	3.4	7.3	47	0.00

Paired-sample *t*-test was conducted to explore the impact of blogging on the students' writing skill improvement (see Table 2). Forty-eight students participated in the experimental group. Regarding their writing skill there was a significant difference in the scores of CSCL group on the pre-test (M = 15.09, SD = 1.37) and the post-test (M = 19.79, SD = 2.54); t (47) = 12.9, p = 0.00, Eta squared = 0.78. The effect size equals 0.78, which is considered a huge effect size. It is worthy of notice that the employment of CSCL has not had a uniform effect on the learners' improvement in writing and has caused the scores to have greater deviations from the mean. This is probably attributable to the learners' individual differences in characteristics such as computer literacy skills, cognitive styles, differential attitudes toward *e*-learning, etc. Furthermore, paired-sample *t*-test was conducted to explore the impact of regular methods of teaching on the students' writing skill improvement (see Table 2); 48 students participated in the control group. Considering their writing skill, there was a

statistically significant difference between the students' performance on the pre-test (*M* = 15.29, SD = 1.21) and post-test (*M* = 17.68, SD = 2.53); *t* (47) = 7.3, *p* = 0.000, Eta squared = 0.53. The effect size turned out to be 0.53, which means the students' scores on the post-test improved slightly more than one standard deviation in comparison with the scores on the pre-test.

In addition to the paired sample t-test repeated test of measurement was conducted to see if there was a significant change in the participants' scores over seven time periods. The following table show the result of the tests.

Table 3. Box's test of equality of covariance of matrices

Box's *M*	**34.88**
F	1.14
Df1	28
Df2	3.07
Sig.	0.27

Table 4. Multivariate's test

Effect		**Value**	***F***	**Hypothesis df**	**Error df**	**Sig.**
Time	Pillai's trace	0.83	76.99	6.00	89.00	0.00
Time*types	Pillai's trace	0.17	3.16	6.00	89.00	0.00

Table 5. Mauchly's test of sphericity and test of within subject effects

Within subject	**MAuchly's *W***	**Approx Chi Square**	**df**	**Sig.**	**Epsilon**
					Greenhouse- Geisser
Time	0.028	327.75	20	0.00	0.36

Table 6. Tests of within subject effects

Source	**df**	***F***	**Sig.**
time			
Greenhouse-Geisser	2.17	225.94	0.00
Time*type			
Greenhouse-Geisser	2.17	9.07	0.00

Table 7. The *CSCL group* and regular class group * time

***CSCL group* and class Time**	**Mean**	**Std. error**	**95% Confidence interval**	
			Lower bound	**Upper bound**
CSCL group				
1	15.20	0.19	14.85	15.64
2	15.83	0.19	15.44	16.21
3	16.45	0.21	16.04	16.87
4	17.14	0.22	16.70	17.59
5	18.00	0.25	17.49	18.50
6	18.66	0.28	18.10	19.22
7	19.04	0.28	18.47	19.61
Regular class				
1	15.16	0.19	14.77	15.56
2	15.52	0.19	15.13	15.90
3	16.20	0.21	15.79	16.62

4	16.62	0.22	16.17	17.07
5	17.06	0.25	16.55	17.57
6	17.56	0.28	17.00	18.12
7	17.68	0.28	17.11	18.25

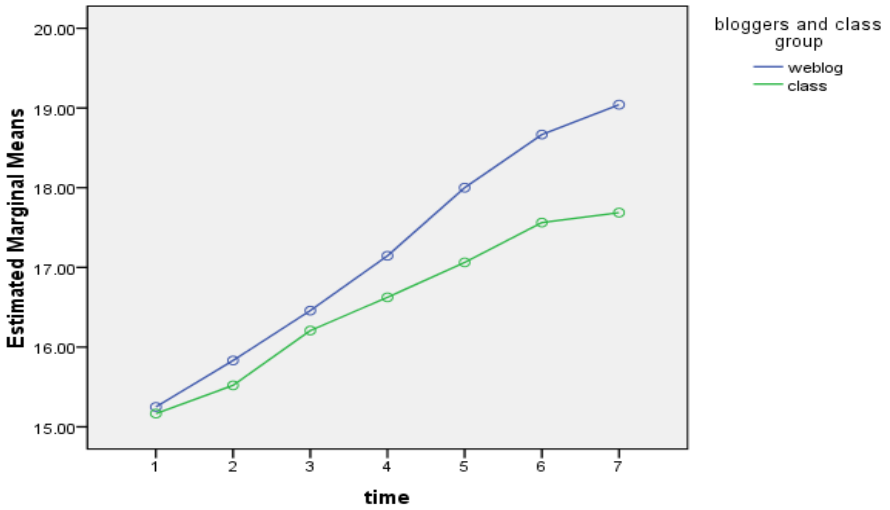


Figure 3. Estimated marginal means of measure

Based on the above tables, data were analysed using repeated test of measurement with a within-subject factor (time) and a between subject factor (the CSCL and regular class group). Box's test of equality of covariance matrices indicated covariance matrices for the groups are equal across the groups as (p = 0.27). According to multivariate test (Pillai's test) time affected the group's improvement and there was a change in the students' scores across seven time periods (p = 0.00). Mauchly's test indicated that the assumption of sphericity had been violated; therefore degrees of freedom were corrected using Greenhouse-Geisser estimates of sphericity (ε = 0.36). Greenhouse-Geisser test in the test of within subject proves the impact of time on the students' performance over seven time periods (p = 0.00). Between subject effect shown in Figure 3 revealed that the students in both groups had improvement during the course; however, the CSCL group's improvement was relatively larger.

The second research question in this study was: Which of the instructional approaches is more effective, the CSCL or the regular writing course? To meet this end, independent sample *t*-test was conducted, whose results are presented in Table 8:

Table 8. Results of independent sample *t*-test for the CSCL group and the regular class group

	Levene's test for equality of variance		***t*-test for equality of means**						
								95% Confidence interval of the difference	
	F	**Sig.**	***t***	**Df**	**Sig. (2- tailed)**	**Mean difference**	**Std. error difference**	**Lower**	**Upper**
Equal variances assumed	0.009	0.92	4.05	94	0.00	2.10	0.51	1.07	3.13
Equal			4.05	93.99	0.00	2.10	0.51	1.07	3.13

variances not assumed	

Based on the results of the study there was a significant difference between the scores of the CSCL Group (M = 19.79, SD = 2.54) and the regular group (M = 17.68, SD = 2.53); t (94) = 4.05, p = 0.00, Eta squared = 0.14, on the post-tests (see Table 7). The results of this study suggested that online writing system significantly affected the students' essay writing. The magnitude of the differences between the two groups was very high, which demonstrates that the e-learners achieved a better result in their essay writing during the course.

The participants' attitude toward the *CSCL* methodology, particularly learning writing skill through weblogs, was the focus of the third research question: 'What is the effect of CSCL on the learners' attitude toward *e*-learning?' To answer this research question and also to figure out what the students thought about the new teaching methodology employed in the study and also explore their attitude toward *e*-learning, the researchers analysed the blogger students' interview. These sections were related to factors of TAM, perceived usefulness, perceived ease of use, attitude toward web, actual use of web and demographics. Each interview lasted for 20 minutes and all the interviews- which were audio taped and transcribed later for further data analysis- were conducted face-to-face with the researchers. To analyse the transcripts of the participants' responses, the thematic analysis was conducted. Thematic analysis, which is a type of qualitative data analysis, attempts to find patterns of meaning (theme) through dataset analysis. As Joffe and Yardley (2004) asserted, theme either refers to content which is completely clear in the context or to a latent content, which should be implicitly referred to, but to perform thematic analysis both types of themes should be clarified. The important themes which were incorporated into the structure of the interviews in the current study consisted of 'Perceived usefulness,' 'Perceived ease of use,' 'Attitude toward Web,' 'Actual use of Web.'

In line with the requirements of CSCL, blogging was meant to be used to assist the students to improve their writing ability and increase their collaboration with their peer-students From among the 48 students who were the members of experimental group, 30 students believed that using weblog could enable them to accomplish their tasks more quickly and it increased their productivity. Furthermore, they asserted that blogging helped them to do their tasks more leisurely because they did not have any time limitations in doing their assignments. Generally speaking, they considered the weblog as a useful and practical tool in their course work; also, they believed that their interactions in the weblogs with their peer-students were facilitative and informative in the sense that they could easily send and receive messages regarding any possible problems they encountered and ask for clarification or guidance from the peers if they needed to. Furthermore, they considered it as an exciting platform which helped them share their ideas with their classmates and used their comments and essays to improve their own essays. Although the majority of the learners considered CSCL as a useful educational approach in its totality, some of them had non-linear and indeterminate feelings and attitudes toward it. They said that CSCL approach helped them to get more interested in learning the writing skill, but they were not sure if they could continue with the approach. They also added that they liked to learn to use weblogs as part of a main course in the field of Computer Sciences/Engineering rather than as a marginal extracurricular activity integrated into an EFL course.

In contrast to the majority of the learners, 18 students did not consider CSCL approach as a useful method and deemed the use of weblogs as a time-consuming task in doing their homework. They concluded that they would prefer the regular methods over CSCL approaches because the regular writing classes were easier and more practical methods to improve their writing skills. Consequently, they did not have positive attitude toward *e*-learning. The students' explanation for their disagreement with CSCL was that, first: 'Iranian students are not accustomed to *e*-learning' and added

that 'this was our first experience of *e*-learning; therefore, we did not take it seriously and considered it as fun.' The second problem they mentioned was about their university schedule. They said that through the semester they had a very tight schedule, so they could not do all the homework that the instructors assigned. The third issue they pointed to was that they needed someone to push them to do their homework.

To sum up, four main themes were investigated, which consisted of 'Perceived usefulness,' 'Perceived ease of use,' Attitude toward CSCL,' 'Actual use of Web.' 62.5% of the participants deemed blogging as a practical and useful device which can be learned and used easily along with other methods of language teaching/learning. From 62.5% of students, 30% of had indeterminate attitude toward blogging as they were not sure if they could continue practicing their writing skill using technological devices; however, 70% of the participants considered weblog as a favorable tool and they believed that they had positive attitude toward blogging. In contrast to the majority of learners 37.5% of them considered blogging as an impractical device which was time-consuming. Consequently, they did not have positive attitude toward blogging, so they preferred regular methods over blogging. Furthermore, they believed that blogging was not as easy as regular methods due to its workload. In general, 59% of the participants logged on their weblog two times a week, 26% of them logged on to their weblogs once a week and 15% of the participants used their weblogs three times a week.

4. Discussion

To explore the differential effects of the CSCL approach and the regular methods of teaching writing skills on the EFL learners, the obtained means from the different pre-and post-test were analysed through the paired-sample and independent-sample t-test procedures. The sum of the results is as follows:

The amount of progress in the regular class group: (pre-test Mean = 15.29, SD = 1.21; post-test Mean = 17.29, SD = 2.53; eta squared = 0.53).

The amount of progress in the CSCL (blogger group): (pre-test Mean = 15.09, SD = 1.37; post-test Mean = 19.79, SD = 2.54; eta squared = 0.78).

The above differences were also reflected in the Independent-sample *t*-test results which analysed the differences of the post-test Means: (t [94] = 4.05, p = 0.00; eta squared = 0.14). As is evident, the eta squared equals 0.14 which means that the performance of the CSCL group was better than the students in the regular class group. The notable positive effect of the CSCL on the performance of the participants can be theoretically justified with reference to the sociocultural theory of cognitive development proposed by Vygotsky (1978). One of the tenets of the theory is the zone of proximal development (ZPD) and the related concepts of 'scaffolding' and 'more knowledgeable other' (MKO). According to Vygotsky (1978), there are two distinct developmental levels: the actual and the potential levels of development. The actual is those developments that the learner can do independently; the potential level refers to those accomplishments that the learner can do with the help of MKO. The ZPD is 'the distance between the actual developmental level as determined through problem solving under adult guidance or in collaboration with more capable peers' (p. 85). A possible justification for the observed superiority of the CSCL group might be that the more knowledgeable peers provided a relatively more refined and fine-tuned assistance to the lees capable peers on specific problems that were raised in the course of communication because they shared neighboring ZPDs with lots of common borders – in contrast to the ZPD of the instructor which was definitely far

distant away from those of the learners. This distance, in its own right, can entail a great deal of artisanship and dexterity on the side of the teachers to locate the exact ZPDs of the learners and thereby to fine-tune their guidance and scaffolding. This fine-tuning and ZPD detection requires many years of teaching experience intermingled with enlightened intuition which takes a lifetime to achieve. Thus, it is highly advisable that teachers and learners take advantage of this potentiality of the peers in providing efficient scaffoldings.

The better performance of the CSCL group can also be attributed to affective factors such as heightened motivation and reduced anxiety as a result of cooperative learning experiences. According to Bold (2006), Williams and Jacobs (2004), blogs can also boost learners' involvement in class activities and build up a stronger sense of community and belongingness to the class which is essential for the learners in online contexts of education. Besides, blogs can create senses of authorship and readership in the novice writers which can culminate in stronger motivations to get involved in practicing their writing skills. Blogging can provide the students with collaborative environments as it can help the learners to have peer-review, authentic communication opportunity and easy publication (Xu, Banerjee, Ramirez, Zhu & Wijekumar, 2019).

The results of this research, considering the positive impact of the CSCL approach on the Iranian students' essay skill, are compatible with the previous studies conducted by Fellner and Apple (2006); Churchill (2009); Blackstone, Spiri and Naganuma (2007); Arslan and Sahin-Kizil (2010); Lai and Chen (2011); Chen and Brown (2012); Taki and Fardafshari (2012); Lin (2015). With regard to the importance of using technological tools in the process of language learning and their potentials to improve essay writing, the results supported the findings of Fellner and Apple (2006) who found that integrating weblogs in the language courses of writing skills can be beneficial. According to the result of these studies, weblogs can provide milieus wherein students can improve their writing skills. Regarding the improvement of students' collaboration with their peer students, the findings of the current research are in line with the study conducted by Lin (2015). He found that the CSCL approach and blogging helps the students to share their ideas with one another, a function that can be considered one of the most important advantages of blogging.

Participants' attitude toward the teaching methodology of the current study, i.e., CSCL, were the subject matter of the third research question. The analysis of the interview scripts demonstrated that most of the students had a positive attitude toward CSCL, they were interested in developing their writing skill through blogging or any other electronically-designed system because they could easily get the bulk of information in a short time and could accomplish their tasks more quickly. They considered weblogs as useful tools in their course work. These findings are compatible with the results of previous studies such as Fellner and Apple (2006); Blackstone, Spiri and Naganuma (2007); Luehmann and Tinelli (2008); Arslan and Sahin-Kizil (2010); Lai and Chen (2011); Chen and Brown (2012); Lin (2015).

The CSCL group's attitude toward language learning, in general, and writing skill, in particular, changed after the experiment. The interviewees acquired positive feelings toward computer-supported teaching and discovered that it could help them improve their writing skills. This study showed that perceived ease of use and perceived usefulness can be considered as key factors which can exert positive impacts on the students' attitude toward CSCL approach. This finding is in harmony with the results reported by some of the previous studies, e.g., Davis (1989); Teo, Lee and Chai (2008); Venkatesh and Davis (2000). As Davis (1989) pointed out, people try to make use of applications to the extent that they can be useful and can help them perform their jobs better. Nevertheless, some of the students had mixed and indeterminate feelings and attitudes toward *e*-learning maybe as it was their

first serious experience of it; furthermore, some of the participants blamed that computer-mediated teaching and use of weblogs imposed extra workload which discouraged them to continue practicing essay writings through blogs, a finding that is similar to what Levy (2009), and Hourigan and Murray (2010) reported.

5. Conclusion

Information technology is tightly weaved into the texture of today's world, and most probably one of the main features that can distinguish the contemporary education from the past traditions is the extensive employment of hi-technology and *e*-learning facilities in the pedagogical institutions. The confines of time and space in finding access to educational resources appear to have unshackled, and teaching/learning has become a round-the-clock possibility. Language pedagogy is no exception and the use of computer-mediated communication, smartphones and other technology-based means of information transmittance should be brought into the heart of any curriculum design and implementation. As the current study demonstrated, the advantages of CSCL not only can enhance the teaching/learning efficiency and efficacy, but also it can reformulate learners' attitudes and feelings toward it in a positive direction. Nevertheless, there are many impediments in the passage to the new era the most salient of which might be the deeply entrenched habits of learning which are long addicted to the regular brick and mortar concepts of schooling. This state of mental dependency is in an urgent need of treatment because the days when there would be no traces of the common physical classes and schools do not seem to be in the far distant. Therefore, we need to make ourselves and the coming generation prepared for the exigencies of moving into the virtual world of education.

More specifically speaking, as Chen and Brown (2012) maintained, CSCL has priority over the regular methods as it provides the opportunity for the students to be analysed by more audiences like their friends, classmates, students from other language schools, and even the native speakers, so their sense of readership, belongingness and authorship can be enhanced.

Lastly, there were two important delimitations in the study: first, it was designed for high proficiency students, and second, the gender factor was not controlled for.

For further research it is suggested that the impact of CSCL on the low proficient students' writing skills be studied, and also the effect of gender on the results of the study be investigated. Moreover, one of the major limitations of the current research was its inability to keep the time-on-tasks on the two methods of instruction balanced; consequently, the apparent superiority of the CSCL group over the regular method group might be attributable to the more time-on-task the bloggers invested on their writings rather than any other inherent quality of *e*-learning. Future research would do well if the students who participate in the regular classes are asked to have peer correction so that the time-on-task becomes somehow constant in the two methods.

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Appendix: Interview questions

I. Perceived usefulness

1. Could using weblog enable you to accomplish your tasks more quickly?

2. Could using weblog improve your job performance?

3. Could weblog increase your productivity?

4. Could weblog enhance your effectiveness in your course work?

5. Could weblog make it easier to do your course work?

6. Do you find weblog useful in your course work?

II. Perceived ease of use

7. Was it easy for you to learn work with weblog?

8. Do you think it was easy to get web to do your tasks?

9. Was your interaction in weblog clear?

10. Was weblog flexible to interact with your classmates?

11. Was it easy for you to become skilful at using weblog?

12. Do you find web easy to use?

III. Attitude toward Web

13. How did you find weblogs as educational tools in the process of learning and practicing weblog?

14. How do you feel about using weblog?

15. Do you consider weblog as a favourable tool?

16. All things considered, using Web in the course work is:

a. Bad-Good

b. Foolish-Wise

c. Unfavorable-Favorable

d. Harmful-Beneficial

e. Negative-Positive

IV. Actual use of Web

17. In general, how often do you log on to the Web class?

18. On average, how long do you stay in the Web class each time you login?