ORIGINAL RESEARCH ARTICLE

Investigating the Impact of Wikis on Writing Performance of EFL Students

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The use of technology has become an indispensable part of current generation of students often referred to as "digital natives" across the world. To make the educational activities compatible with the present day life itself, an increasing number of universities are seeking to provide students with more flexible and innovative language learning environments through Web 2.0 technologies. One powerful Web 2.0 tool that has recently attracted great attention in the field of second or foreign language teaching (L2) is wikis. Informed by the constructivist model of learning and by theories in L2 writing, this study aims to explore the impact of incorporating wikis into a writing course on writing performance of English as a foreign language (EFL) students. Through a quasi-experimental research design, students in the control group (n=17) received only in-class process-oriented writing instruction, and the experimental group students (n=20) integrated wiki tools into their writing process. The main data for the study were collected through writing performance pre-test and post-test. The findings indicated that using wikis had a positive impact on the overall writing performance of the participants in the experimental group. This study, therefore, recommends that EFL teachers employ wikis when they seek the ways of promoting their instructional practices through technology-enhanced environment."

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INTRODUCTION

Transforming the way we communicate, the World Wide Web continues to evolve and pervade in almost every part of life, which has resulted in the emergence of a generation of students who are called "digital natives" (Prensky, 2001) for whom technology "is normalized … used every day like a pen or a book" (Bax, 2003 p. 23-24). This has led the practitioners in the field of education to update instructional styles to better suit this new generation of students. Incorporating web tools into the education is among the substantial steps towards redefining instructional methodology to better match today's learners.

Web 2.0 is a recent development in internet technology which has potential to address the needs of today's learners. Often dubbed *social web,* it represents a sub-section of information literacy and communication technologies. In comparison with its precursor Web 1.0 –or read-only web-, in Web 2.0, it is easier to generate, manage and publish content, turning it into read-write web (West & West, 2009). Web 2.0 tools are promising especially in language learning as they a) facilitate communication in the target language through a medium with which the students are already familiar, b) connect students to others outside the classroom, c) provide students with a sense of audience for their language writing (Rüschoff, 2009; Schmid, 2009). As summarized well by Guth (2009), the read-write web enables teachers to create innovative learning environments to support face-to-face class settings.

Among the suites of Web 2.0 technologies, wikis have rapidly been growing in popularity in education and in language learning in particular over the past decade, and a number of researchers have investigated potential uses of wikis in learning language skills (Chang, 2010; Chen, 2008; Ducate, Anderson, & Moreno, 2011; Kovacic, Bubas, & Zlatovic, 2008; Lai & Ng, 2011; Wichadee, 2013). The most widely researched area of instruction regarding the effect of wiki usage is writing as wikis directly relates to publishing content on the web (Kessler, 2009; Kost, 2011; Kuteeva, 2011; Lee & Bonk, 2009; Miyazoe & Anderson, 2010; Wu, 2013; Xiao & Lucking, 2008).

With the purpose of contributing to the relevant literature, this paper describes a study on the use of wikis in a writing course for EFL learners. The paper begins with reviewing the literature on wikis in education with a specific focus on wikis in EFL writing which is followed by the presentation of theoretical framework in which this study is situated. It then continues with the details of the present study including findings from the study. It ends with the implications that could be useful for language teachers interested in incorporating Web 2.0 tools into their practice.

LITERATURE REVIEW

Wikis and Educational Uses

Developed in the middle of the 90s as a part of Web 2.0, wikis are a piece of software that enables users to freely create and edit content on the web pages. Leuf and Cunningham

(2001) define wikis as "freely expandable collection of interlinked Web pages, a hypertext system for storing and modifying information - a database, where each page is easily edited by any user with a forms-capable Web browser client" (p.14). The word *wiki* comes from the Hawaiian word meaning "quick", implying the fact that wikis are certainly quick and easy to learn to use (Lin & Yang, 2011).

Three main functions are available in almost all wiki applications: *Edit, History and Discuss. Edit* function allows the users to modify or revise the text, images or hyperlinks on the page. Similar to *track changes* in Microsoft word, *History* tab illustrates the changes the page has gone through with the colour coding of deleted and inserted text. This allows users to simultaneously view the original and edited content, facilitating comparisons between old and new information (Kuteeva, 2011). Through the *Discuss* function, users can interact by commenting on the page content or revisions. By means of all these features, wikis enable participants to "generate, mix, edit and synthesise subject-specific knowledge within a shared and openly accessible digital space" (Wheeler, Yeomans, & Wheeler, 2008, p.989).

As a promising tool to revolutionize the field of language learning, various wiki applications (e.g. Wikispaces, PmWiki, TWiki, TikiWiki and MediaWiki) have been rapidly adopted and widely used by language teachers (Li, 2013). Drawing from the literature on wikis, Cole (2009) lists four broad categories for wiki use:

a) **Single user** through which individual students write and edit their own thoughts. This is useful for revision and monitoring progress in language learning process.

b) **Lab Book** through which students peer review page content by adding commentary or annotations to the content (e.g. lecture notes, seminar discussions, or students' writings).

c) **Collaborative writing** through which students produce a project, essay or a presentation in a team for joint research.

d) **Creating a topical knowledge repository for a module cohort** through which students create course content that supplements and extends delivered material.

The present study incorporating wikis into the language learning process of EFL students focuses on the first two educational usages of wikis highlighted above.

Aforementioned educational possibilities of wikis offer a number of benefits to the language learners. For example, students' learning is empowered by enhanced interaction on wikis, which is fostered in the form of learner-content interaction, learner-instructor interaction and learner-learner interaction on the wikis. As students' work with its each stages of progress is visible to peers and the instructor at any time, this visibility and sense of creativity could be highly motivating (Trentin, 2009; Wheeler et al., 2008) . Additionally, wikis make an efficient platform for both summative and formative assessment supporting both self-assessment and peer-assessment (Lai & Ng, 2011). Last but not the least, wikis turn the learning into a more students-centred and democratic style (Kear, Woodthorpe, Robertson, & Hutchison, 2010).

One area of instruction where wikis function best and advantages summarized above are observed well is writing. The following section briefly explains the significance of writing skill for EFL learners and basic requirements for an effective writing instruction with a focus on how wikis could serve in a writing course.

Writing Skill for EFL Learners and Wikis

Writing instruction in EFL context has special significance as good writing is closely related to overall language proficiency. Warschauer (2010) lists three main reasons why writing should be emphasized for foreign language learners. First, writing is a crucial skill for success both in academic and work life. Second, writing can serve as an effective tool for the development of language proficiency since learners explore advanced grammatical and lexical knowledge, syntactic expression and a wide variety of strategies like organization and style. Third, writing across the curriculum could facilitate mastering diverse subject matters as written expression help learners to "raise their awareness of knowledge gaps in the texts and elaborate mental representation of knowledge that can be more easily retrieved" (Warschauer, 2010, p.3). Therefore, effective writing instruction means guiding students toward achieving the highest ability in communicating in words.

A widespread approach in recent years in writing instruction is process approach which sees writing as a non-linear activity in which learners go recursively through such stages as planning, drafting, revising, editing, and publishing, and it puts special emphasis on such concepts as audience, purpose, and interaction with peers and the teacher (Hyland, 2003). In this view, writing is regarded as a social activity dependent on the relationship between writer, reader and the social context. For an effective writing instruction, writer–reader relationship and the notion of the writer as a member of a given discourse community are particularly highlighted. As a cyclical process, in this approach to writing, writers simultaneously shape-reshape their work producing multiple drafts resulting from revisions to involve the reader and are influenced by the readers' expectations expressed through feedback. It is this view of writing that inspired the study presented in this paper.

A useful tool that apparently promotes process oriented writing instruction is wiki that provides an online platform for learners to practice writing. Based on the inherent features of internet removing the time and place restrictions from the learning process, wikis allow students to compose a piece of writing at their own pace. The asynchronous nature of writing in a wiki is something facilitating writing for the students as what is being written in a wiki can be saved by the wiki writer and continued at another time in the future. This allows students to produce multiple drafts before finalizing the writing, which is particularly encouraged in process approach. As all the earlier and intermediate drafts produced before the final version are kept and made easily accessible through the *history* function of the wiki, monitoring the learning process on the part of the learner is empowered. Since a log of edits with their authors and time is produced on a separate page, the instructor can use this to evaluate who contributed what, which provides valuable insights in terms of the planning the instructional steps. Wikis are also powerful tools for enhancing the peer interaction, which has proven to be a crucial factor in improving students' writing skill (Xiao & Lucking, 2008). As noted by Wu (2013), wiki is a useful interface for peer revising that that requires students to develop their content and for peer editing that requires students to attend to linguistic forms and correct the errors. Using the *discuss* and *edit* functions of the wiki page, anyone in the given discourse community can contribute to the writing of the students. This could arouse the sense of audience in the students, thus, enabling them to

experience writing as a social process (Richardson, 2006). Figure 1 illustrates the interactional nature of the wiki on a written text.

Figure 1
Interactional Nature of the Wiki in a Writing Course
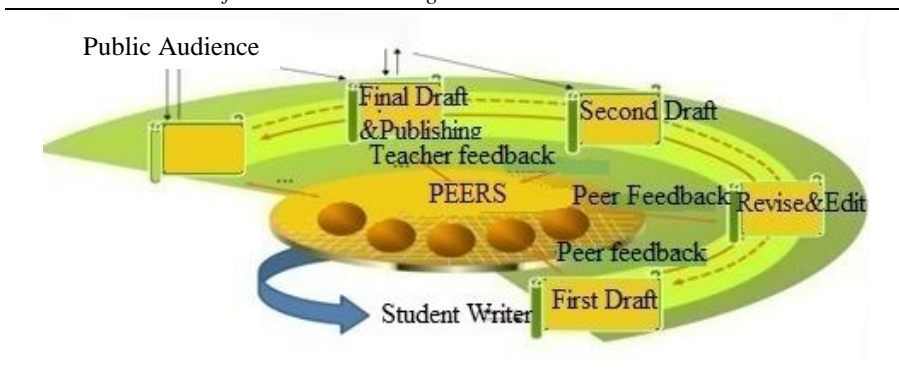
Adapted from Lee and Bonk (2009)

A number of researchers carried out studies to provide the implications on the use of wikis in second/foreign language classes. Among many others, Kessler (2009), for instance, studied peer editing behaviours of the 40 EFL learners in a Mexican university. The researcher especially focused on the corrections made by the peers on collaboratively produced writing tasks. The main core of the study was a wiki created, developed and revised collaboratively. The results indicated that students had a tendency to pay attention to the meaning rather than form while editing their peers' writings. One implication of the study is that wikis are powerful tools to create collaborative environments to enhance peer interaction. Miyazoe and Anderson (2010) examined the effectiveness of online writing in EFL context through simultaneous application of wikis, blogs and forums. Data were gathered through survey, interview and text analysis. Findings showed that all three web tools have positive impacts on students' learning outcomes and wikis are reported to be the most favourable tool among the participants. In another study, Kuteeva (2011) investigated how a wiki was used to teach writing for academic purposes. Findings demonstrated that using wiki for writing activities made students pay attention to grammatical correctness and structural coherence. In a similar vein, Kost (2011) analysed the use of wikis for collaborative writing projects. She reported students' positive perception towards the integration of wikis into their writing course and concluded that wiki environment could promote successful revision behaviour. In a recent study, Woo, Kai and Li (2013) researched the use of wikis for writing among 119 EFL learners. Data collected through wiki system revealed that wiki usage resulted in better writing performance.

Drawing from the previous studies and aiming at contributing to the literature on wikis, this study investigates the impact of integrating wikis into the writing process of EFL learners on their writing performance.

Theoretical Framework: Social Constructivist Learning and Wikis

Grounded in the work of Vygotsky (1978) and having influences from John Dewey, social constructivism is a theory of learning about constructing knowledge, not receiving it; emphasizes thinking and analysing rather than memorizing, understanding and applying rather than repeating back, and being active, not passive. Drawing from the Vygotsky's principle that knowledge is a social construct which people uniquely create as they interact with their environment and with others; social constructivism puts social interaction in the centre of all learning (Halvorsen, 2009). It acknowledges students' pre-existing knowledge in helping students deconstruct and reconstruct knowledge as they engage actively and collaboratively in building new understandings through scaffolded learning experiences (Pegrum, 2009). Scaffold or guidance is provided by the teacher and the peers in the learner's zone of proximal development (ZPD), that is, the distance between what a learner can achieve independently and what s/he may achieve with support.

In order for the knowledge construction to occur, students should be equipped with the abilities to seek out information through networks of contacts, to explore possibilities, try out alternative solutions, revise their thinking and build understanding with others engaged in a given discourse community (Halvorsen, 2009; Pegrum, 2009). Therefore, teachers should create environments in which learners have a chance to interact with each other in developing their understandings.

One way of creating such an environment is the use of wikis which has great potential to enable students to construct their own knowledge basis through interacting with each other (Achterman, 2006). Students can easily create and change content on the wiki. Some of these changes reflect newly-added ideas or feedback to others' ideas or reflections on others' work. Besides peer-to-peer collaboration, teachers can also easily participate by posting comments on students' work (Coniam & Lee, 2008). The structure of a wiki, therefore, provides meaningful interaction among students, content and the teacher (Lin & Yang, 2011). In addition to this, wikis allow students to enrich the content through insertion of multimedia content and hyperlinks. Through "linking up peripherals such as visuals to the central idea" (Lin & Yang, 2011), students actively participate in meaning construction. Wikis can also serve as a platform for group projects as they facilitate the exchange of ideas, which could be difficult to achieve in a classroom setting due to time restriction. In this respect, wikis are useful for the students to teach them how to work with others and how to form community.

The relationship between wikis and developments in students' writing is generally grounded in the social constructivist theory (Kraiger, 2008). As wikis allow a number of students to view or edit the wiki content, contribute or upload new material to the wiki page, they provide flexibility and authenticity. Authenticity partly comes from the wiki's potential audiences as it is open to the public. Sense of audience and peer interaction is continually emphasized in process approach to writing as it is noted that sense of audience could encourage students to be more enthusiastic in writing their work (Arslan & Şahin-Kızıl, 2012; Richardson, 2006). Thus, wikis as an educational tool are especially in line with the process oriented writing instruction within the framework of social constructivism.

THE STUDY

Given the apparent relation between the technological characteristics of wikis and models of learning and writing instruction (social constructivism and process oriented approach to writing), the present study sought to investigate whether the use of wikis as a supplementary tool for writing process had impact on writing performance of EFL students in terms of accuracy and quality of their writings.

In the present study, *writing performance* is defined as the production of a student writer's ideas on a certain topic in a written form with clear organization of ideas, proper and relevant content taking the audience into consideration and using appropriate mechanics. *Accuracy* here refers to the lexico-grammatical adequacy in the written text (e.g. grammar usage, spelling, word choice, word order, punctuation), whereas *quality* points to organization, elaboration, coverage, clarity, links, and intent.

Research Setting and Participants

This study was conducted in a preparatory program at a Turkish university where students enrolled in various departments undergo intensive instruction in English before they pursue their education in their respective fields of study. The curriculum for the group of students with whom the study was conducted consists of four English courses: grammar (8 hours), reading (6 hours), listening and speaking (8 hours), and writing (8 hours). The courses are not integrated and writing instruction is limited to the writing course.

The writing course aims at enabling students to practice the language they have learned and to express themselves in well-organized paragraphs and essays. In the first term, students are instructed on paragraph writing, and in the second term they are taught essay writing. Throughout the writing instruction, a process approach is followed, and the writing activities in the research setting are confined to in-class activities. Instructional process is as follows: Students are initially given theoretical information about the target paragraph/essay type, and then instructed on the use of relevant language structures. After they examine model writings related to the target paragraph/essay type, they are assigned to write their own paragraphs on their own choice of topic. Feedback sessions are also held in the classroom. Due to time limitations, little time is given for peer feedback; thus, students generally get teacher feedback. After the teacher gives written feedback, students are asked to produce a final version of their paragraphs/essays. Students have no place to publish their writings and they collect all their works in a dossier to be handed in at the end of the term for a final grade.

Considering the aforementioned properties of the research setting, this study sought to provide a solution in order to enhance the writing skill of the students by incorporating wikis in the writing process in the research setting.

Participants drawn in accordance with convenience sampling (Cohen, Manion, & Morrison, 2000) were 37 (9 female and 28 male) non-native speakers of English from various educational backgrounds studying in the preparatory program. Average age for all the participants was identified as 19.7. All participants in this study shared the same native language, Turkish. At the time of the study, they had already completed levels A1 and A2,

and they started the B1 level according to the Common European Framework (CEF). As such, they were considered independent users of the target language. In an interview conducted at the beginning of the study, the participants reported that they were familiar with the use of web technology (e.g. browsing the net, using email and text chat), but none of them had used a wiki before. Following a quasi-experimental design, this study included an experimental group (n=20) using wikis as a supplementary tool for their writing process and a control group (n=17) receiving in-class writing instruction based on the process approach.

Data Collection and Analysis

Data for this current study came from Writing Performance Test which consisted of a pre-test and post-test. At the beginning of the study, to measure the existing ability of the participants in writing, students in both experimental and the control group were asked to perform a writing task that aimed to measure a single, integrated writing behaviour and to rate participants' overall writing proficiency. Writing performance test provided students with choices on the topics and essay types that they were going to learn throughout the term. The participants were asked to choose one topic and write an essay. At the end of the study, the same test was repeated as post-test for both groups.

Three experienced EFL teachers of writing who had similar professional backgrounds and worked in the research setting were asked to rate the participants' writings against a Writing Performance Rubric developed in accordance with the relevant literature. The rubric was a focused analytic scale describing written text in two major components (i.e. **accuracy** including word choice, word order, grammatical aspects and mechanics; **quality** including organization, elaboration, coverage, clarity and links) along with four ranges of mastery levels. The three raters were trained on the proper use of scoring rubric using a set of sample writings. The inter-rater reliability between the three raters was checked and it was found as 0.93. The raters were required to score each participant's paper separately and average of the three raters' scores was considered the final score of the participants in the experimental and control groups.

The data elicited through writing performance test were analysed via paired sample t-test to determine if there was a difference from pre-test to post-test in each group separately. The same data were analysed via analysis of covariance (ANCOVA) to see whether the difference between these groups resulted from the treatment or from the pre-existing differences.

Research Procedures

This study was carried out in the second term of the academic year when instructional activities centred around essay writing. At the beginning of the term, a writing performance pretest was administered to the students in experimental and control groups. The researcher instructed both groups on writing in 8 hours a week in the writing class. The writing course for both groups followed a process approach which underlines the stages of the writing process (pre-writing, drafting, revising and publishing), multiple drafts, and peer and

teacher feedback. Throughout the study which lasted 15 weeks, participants were given five writing tasks requiring them to write essays on the topic they chose. The five writing tasks for both groups focused on the same writing genres and grammatical points, and the classroom-based instructional activities were the same for both groups.

The instructional process for the control group was as follows: In the first two hours of the week, the target essay type was introduced to the students and two model essays were examined in the classroom. In the following hours, vocabulary and the language structures necessary for the target type were studied and the students were provided with related exercises. Through teacher modelling, the students were taught how to write an essay in the target type, and then they were assigned to choose a topic to write on. Pre-writing activities were carried out in the classroom. Producing the first draft was assigned as homework due to time restrictions. Students brought their first drafts to the classroom to share with their peers and the teacher. Feedback sessions were realized in the classroom as long as the class time was suitable. Students got feedback on their first drafts from their peers and the course instructor, and they received homework assignments on revising and editing the first drafts. To finalize the writing process for the target type, students wrote the final drafts but they had no place to publish their final drafts. As a follow-up activity, students were asked to reflect on the learning process, which was carried out in the classroom as well.

Figure 2
Screenshot of the Class Wiki

The instructional process for the experimental group was the same in terms of the in-class activities; however, the students in the experimental group benefited from the use of wikis in their writing process, which was the unique instructional difference between the two groups. In the first week of the study, the experimental group was informed about wikis and they received training on how to form and use wikis during a lab session. Two types of wikis were set up by using the free, online wiki provider *www.wikispaces.com*, which allows users to create their own writing spaces with simple, ready-made tools. One of the wikis for the study was a class wiki which served as a place for sharing the instructional material with the students, and for providing students with extra language input. Class wiki

consisted of an introductory message welcoming students and informing them about the content and goals of the writing course. A calendar which was continually updated with the announcements on what students were expected to do was inserted in the class wiki as well. The most important function of the class wiki was to provide students with plenty of self-study materials through the links of language teaching websites carefully compiled by the researcher/instructor. Through the class wikis, experimental students were exposed to much more model writings which helped them to have sense of good writing, and they were also able to study on language use via practicing certain language structures necessary for the target essay type. Figure 2 is a screenshot taken from the class wiki designed for the study.

The second type of the wiki was learner wikis constructed by each student in the experimental group to share their writings with their peers. The students were free in deciding the appearance of their wiki pages choosing from a number of templates, inserting videos, texts, pictures, which contributed to the sense of customized learning environments in the students. The participants, at the beginning of the study, were encouraged to invite their peers to their wikis and link their page to the navigation bar in the class wiki to make it visible for all users of the class wiki. Regarding the stages of writing process, the pre-writing stage was realized during the class time; however, all other stages were carried out on the wiki. After learning about the essay type of the week, examining the model writings and being instructed on the language use in the class and subsequently via materials on the class wiki, the students were assigned to choose a topic. After producing ideas through various pre-writing activities, they were required to write and publish their first drafts on their wiki pages. During the drafting stage, the students were able to communicate with the course instructor and their peers. After drafting, students were required to give feedback to their peers by using the "discuss" function of the wikis through the checklists introduced to the students in detail at the beginning of the term. The feedback stage was the most enjoyable part of wiki writing as the students were observed to be eager to address an audience other than the teacher. Some of the students even had audience out of the classroom (i.e. their friends from other cities or family members) due to open-to-anyone nature of the wikis. After peer feedback, the participants got teacher feedback focusing on the writings in terms of structure, content and accuracy to guide them in revising their writings. During the revision and editing stages which were also carried out on the wikis, students again were able to interact with classmates and teacher as their drafts were easily accessible. Subsequently, the students in the experimental group published the final version of their assignments. The writing process ended with a follow-up requiring them to publish a reflection evaluating their learning process based on a guideline provided beforehand. The same steps were repeated for the five writing tasks throughout the study.

FINDINGS AND DISCUSSION

In order to analyse the difference between writing performance pre-test and post-test scores in the control group (classroom-based process writing instruction) and in the experimental group (wiki-integrated process writing instruction), a paired sample t-test was used. Table 1 presents the results.

Table 1

Paired Sample t-test Results for Writing Performance Scores in Each Group

Instruction method	Pre-test			Post-test		
	N	M	SD	M	SD	t
In-class writing instruction	17	51.47	9.78	62.41	7.63	-9.63
Wiki-integrated writing instruction	20	57.25	10.67	73.20	10.22	-13.94

As seen in Table 1, the control group increased their test scores from a pre-test score 51.47 to a post-test score 62.41. A similar increase was observed in the experimental group as well since their pre-test score mean was 57.25 while their post-test score mean was measured as 73.20. This finding indicated that both in-class writing instruction and the wiki-integrated writing instruction had positive impact on students' overall writing performance.

As observed in the pre-test results, the experimental group was better in their writing performance, which could also have effect in the post-test results. So as to understand whether the difference in the post-test results of the control group and experimental group is related to the pre-test results or the treatment itself (use of wikis), a subsequent ANCOVA which presents source of change in the post-test results was applied to the data. Hatch and Lazarton (1991) state that ANCOVA is used "*to control for some variable – Perhaps a pre-test score- so that the measurement of dependent variable is adjusted taking into account this initial differences among the subjects*" (p. 387). In the analysis, pre-test writing performance scores were set as a covariate. Table 2 shows the results of ANCOVA.

Table 2

ANCOVA Results for Writing Performance Scores

Source	SS	df	MS	F	Sig.	Descriptive Statistics		
						Groups	Mean	Adjusted Mean
Intercept	780,829	1	780,829	39,682	,000			
Writing Performance Pre-test	225,287	1	225,287	114,359	,000			
Instruction Method	334,618	1	334,618	17,005	,000			
Error	669,031	34	19,677			Experimental Group	62.41	64,84
Total	176303,000	37				Control Group	73.20	71,12

As can be seen in Table 2, the pre-test results significantly correlated with the post-test scores- F (1.34) = 114, 35 p < 0.05- indicating that experimental students' higher pre-test scores may lead them to get higher scores from the post-test. After taking the pre-test

scores under control (see adjusted means for both group in Table 2), it was determined that the treatment had a statistically significant impact on the post-test results; F (1.34) = 17.00 p < 0.05. Depending on these findings, it could be claimed that using wikis as a supplementary tool for writing process is more effective than in-class writing instruction as experimental students improved their writing performance more than the control group students. This finding lends further support to the claims in the relevant literature that use of wikis is effective in enhancing writing performance of the students (Kost, 2011; Kuteeva, 2011; Woo et al., 2013).

The data were further analysed through ANCOVA to find out the effect of wiki use on writing performance of the students in terms of accuracy and quality of their writings as the soring rubric used in the study enabled raters to evaluate writing performance over the quality and accuracy of the writings separately. Table 3 and 4 present the results.

Table 3
ANCOVA Results for Writing Performance: Quality

						Descriptive Statistics		
Source	SS	df	MS	F	Sig.	Groups	Mean	SD
Intercept	1051,323	1	1051,323	47,501	,000			
Writing Performance: Quality Pre-test	324,273	1	324,273	14,651	,001			
Instruction Method	233,164	1	233,164	10,535	,003			
Error	752,512	34	22,133			Experimental Group	41,65	5,76
Total	54883,000	37				Control Group	33,52	5,28

Table 3 and 4 clearly demonstrate that experimental group outperformed control group in both categories of writing performance. While the mean score of writing quality for control group was 33, 52, experimental students got 41, 65 mean in the same category. Measuring writing accuracy also revealed a difference between the control group (M= 27, 58) and the experimental group (M= 32, 05). The difference in the post-test scores between the groups was found to be significant after controlling the pre-test results for quality (F (1.34)= 10,535 p< 0.05) and for accuracy (F (1.34)= 14,352 p< 0.05).

Table 4
ANCOVA Results for Writing Performance: Accuracy

						Descriptive Statistics		
Source	SS	df	MS	F	Sig.	Groups	Mean	SD
Intercept	215,332	1	215,332	14,710	,001			
Writing Performance: Accuracy Pre-test	677,348	1	677,348	46,271	,000			
Instruction Method	210,090	1	210,090	14,352	,001			
Error	497,720	34	14,639			Experimental Group	32,0500	5,72
Total	34658,000	37				Control Group	27,58	5,87

Another important finding of this study was that the students in the experimental group improved their writing quality which includes organization, elaboration, coverage, clarity and links in the writing more than accuracy that covers word choice, word order, grammatical aspects and mechanics of the essays. This means that trough using wikis, students paid more attention to the content of their essays than the grammatical correctness. In other words, they were more interested in the meaning and the messages that they were trying to convey while writing their essays. The sense of audience could make a possible explanation for this result: use of wikis for writing enabled students to reach audience other than the teacher. Students' writings were on the net open to all the classmates, and the students were reading and commenting on the essays that attract their attention. What was observed from the peer interaction was that the more peers in number read an essay, the more the writer got motivated. Therefore, attracting their peers' attention can be a reason why students cared the content and the messages of their writings more than sentence structures. It could be assumed that writing through wikis promotes peer-interaction and meaning-making, and facilitate sharing and distribution of knowledge as well (Wichadee, 2013)

This finding that wiki integration is more effective on the quality than the accuracy of student writing is in line with the previous research. In the same vein with Mak and Coniam (2008) who found that the use of wikis enhanced students writing performance in terms of organisation of the ideas and content of the writing, this study suggests that wikis are effective in improving the writing quality. Relatively low effect of wikis on writing accuracy was noted by Warschauer and Liaw (2011) who state that wikis "may be less useful in promoting writing accuracy" (p.111). In parallel with the literature, this finding of the present study could be linked to the fact that peer interaction facilitated through wikis has positive impact on producing meaningful and well organized writings.

CONCLUSION

The study reported in this paper has provided an evaluation of a wiki as a supplementary tool for writing instruction in an EFL context. The research has thus contributed to the relevant literature. It was found that integrating wiki into the writing process could be an effective way of creating fruitful learning environments for enhancing the writing performance of EFL students. Use of wikis encouraged the experimental students to engage effectively in the writing process and hence, they improved their writing performance. Depending on the user-friendly nature of wikis, the experimental students easily created and added content on their wiki pages, and they easily shared and exchanged ideas to develop their writing performance. As wikis effectively support peer review and reflection, students had the chance of addressing audience other than the teacher, which had potential in contributing to the development of their writing performance. Within the framework of social constructivism, wikis enabled students to learn from each other's work through scaffolding and feedback, and to revise their writing considering the peers' comments, which could help them to develop their writing performance.

The findings of this study, therefore, suggest that writing teachers could benefit from wikis in their instructional practices. Incorporating such a web tool into the mainstream writing classes may especially useful for those settings in which students have no audience other than the teacher and have no place to publish their writings.

Although the current study produced informative findings related to use of wikis in an EFL writing class, some limitations need to be acknowledged. One of the limitations is the sample size. This study was conducted with the participation of only 37 EFL students, which poses constraints on generalizing findings to the whole EFL community. Hence, further research could replicate the study with a larger sample to have sound claims. Another limitation concerns with the nature of the study itself. As the treatment required, the students in the experimental group were provided with extra language and writing input. Since the control group received the whole instruction through regular in-class sessions, the writing and language input remained restricted in amount for them. Although varied amount of input for the experimental group was realized only through the incorporation of wikis into their writing instruction, the difference between the control and experimental groups in terms of final measurement of their writing performance might have resulted from the different amount of input. Therefore, future research might investigate the effect of wiki-integrated writing instruction by providing the same amount of instructional materials for both groups. Finally, novelty effect of wiki for the experimental group could be regarded as a limitation. Though all the participants were computer literate, they had never used wikis as a learning tool before the study. Therefore, wikis' being novel for the students might have affected their participation and led them to be more attentive about their writings. A further study could focus on wiki usage in a longer time span by enabling the participants to fully get accustomed to the use of wiki as course tool.

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