Cakrawala Pendidikan
Jurnal Ilmiah Pendidikan
Vol. 43 No. 2, June 2024, pp.521-533
https://journal.uny.ac.id/index.php/cp/issue/view/2677
DOI: https://doi.org/10.21831/cp.v43i2.67384

The effect of face-to-face versus web-based structured peer review on writing improvement: Evidence from ESP students

Abbas Pourhosein Gilakjani*, Reihaneh Sheikhy Behdani
Islamic Azad University, Islamic Republic of Iran
*Corresponding Author: abbas.pourhossein@yahoo.com

ABSTRACT

Engaging students in peer review to improve their writing has become a pedagogical approach. However, little evidence has supported the effects of web-based (WB) peer evaluation on students' writing enhancement. In terms of linguistic features, the present study, employing a quasi-experimental design, investigated the effect of WB versus face-to-face (FTF) peer review on ESP students' writing. Three intact classes (N = 48, 53) were split into two experimental groups and one control group at random to achieve this aim. The results of the pretests revealed that all the participants were homogenous concerning language proficiency and writing ability based on the Oxford Quick Placement Test (OQPT) and a writing test. While there was no peer review for the control group, the two experimental groups practiced peer review, one through FTF interaction and one via Peermark, a WB program provided through Turnitin. The findings indicated that the experimental group outperformed the control group. The findings also showed that the FTF group outperformed the WB group in writing. However, the analysis of linguistic features in the two modes of peer review demonstrated that WB interaction can be more effective in improving writing fluency than FTF peer review. Implementation of the findings for teachers and teacher trainers has been discussed.

Keywords: accuracy, complexity, fluency, peer review, technology, writing improvement

Article history

Received:	*Revised:*	*Accepted:*	*Published:*
29 October 2023	*19 March 2024*	*18 April 2024*	*29 June 2024*

Citation (APA Style): Gilakjani, A. P., & Behdani, R. S. (2024). The effect of face-to-face versus web-based structured peer review on writing improvement: Evidence from ESP students. *Cakrawala Pendidikan: Jurnal Ilmiah Pendidikan, 43*(2), 521-533. DOI: https://doi.org/10.21831/cp.v43i2.67384

INTRODUCTION

The utilization of peer review, also known as peer editing, peer assessment, or peer response, pertains to collaborative endeavors wherein students engage in providing feedback on each other's written work through both written and spoken means, actively participating in the iterative process of revising, and improving their respective versions (Hansen & Liu, 2005). Peer review's primary goal is to support students in "expressing, interpreting, and negotiating meaning" through group work (Lee & VanPatten, 2003). A substantial body of empirical research has confirmed the various advantages associated with peer review. These studies consistently find that peer review enhances learner autonomy, fosters a sense of ownership over written texts, alters the perspectives of student reviewers, impacts the attitudes of authors, and ultimately enhances the overall quality of their interactions (Berg, 1999; Min, 2005, 2006), lubricates revision, escalates learners' audience awareness, exposes students to different writing styles, improves writing, and is considered a positive factor in higher education (Cho, 2004; Cho & MacArthur, 2010; Cho et al., 2006; Grabe & Kaplan, 1996; Liu & Hansen, 2002; Min, 2006, 2008; Topping, 2003).

Traditionally, writing courses organized students into groups or pairs for FTF interactions, where they reviewed and provided feedback on their peers' written work. Subsequently, because

of advancements in technology, some writing instructors initiated a transition from the traditional method of peer feedback to one that incorporated a blend of electronic platforms, such as network-based or WB discussion boards. WB instruments, including blogs, wikis, and more recently, WB peer review systems, are commonly employed in educational settings to facilitate the instruction of writing and foster student participation in peer review exercises. The basic principle underlying WB peer review systems, according to Cho & Schunn (2004), is to develop content knowledge among students through writing, to reduce the instructor's workload by assisting them in organizing writing assignments, to put students in authentic context and provide authentic audiences to give and receive feedback, to make students practice writing via constant revision, and to engage students in offering comments and responding constructively to their peers (Guardado & Shi, 2007; Wadhwa et al., 2006). Despite extensive research on the impact of peer review on students' writing, attitudes, and affective benefits, most of these studies focused on a single communication mode (Breuch, 2004; Guardado & Shi, 2007; Liang, 2010; Liou & Peng, 2009; Miao et al., 2006; Min, 2006, 2008; Rollinson, 2005; Tuzi, 2004; Wang, 2004). Only a few studies compared the FTF with WB peer review and revealed that different communication modes lead to different comments and subsequent revisions (Braine, 2001; Chang, 2012; Honeycutt, 2001; Liu & Sadler, 2003). However, the impact of WB peer review on linguistic features in two communication modes (i.e., FTF versus WB) was underexplored.

Peer review has long been a standard practice in academic writing programs. It is commonly known that peer review helps students develop their critical thinking abilities, audience awareness, and writing skills (e.g., Liu & Hansen, 2002; Lundstrom & Baker, 2009). Online peer review (OLPR) has become increasingly popular among instructors of composition and L2 courses because of the emergence of new technology. Recent research (e.g., Chang, 2012; Guardado & Shi, 2007; Liu & Sadler, 2003; Tuzi, 2004) has highlighted the positive aspects of WB peer feedback compared to face-to-face (FTF) peer feedback. These benefits include interactive textual exchange, increased student engagement, and a greater proportion of feedback focused on revision, which subsequently leads to a higher rate of incorporated revisions. The underlying reasons for the benefits can be outlined as follows: (a) technology-enhanced high visibility causes people to feel more responsible (Sengupta, 2001); (b) pseudonym use in computer-mediated communication (CMC) environments promotes reviewers to be more open-minded, objective, and critical (Li & Li, 2017); (c) the utilization of asynchronous CMC allows students to engage in response rehearsal and formulation of suggestions at their own preferred pace, leading to the provision of feedback that is more beneficial (DiGiovanni & Nagaswami, 2001); and (d) online feedback provides a conducive environment that is less frightening for ESL students. This is particularly beneficial for students who may experience concerns over their language ability and come from cultural backgrounds that highly prioritize attentive listening (Liu & Sadler, 2003), encouraging them to participate more (Liu & Sadler, 2003).

Previous studies have investigated the benefits of peer review through the utilization of various technological platforms, such as Microsoft Word (Abuseileek & Abualsha, 2014), synchronous chatting (Chang, 2012), bulletin-board posting (Guardado & Shi, 2007), and blogs (Chen, 2012). However, hardly any research has been done on the recently created asynchronous CMC tool, Turnitin PeerMark. Turnitin, once regarded as a service that checked for plagiarism, is increasingly gaining acceptance as a tool to help students write better (Straumsheim, 2016). Along with the originality check, additional features like PeerMark, Revision Assistant, and Scoring Engine have been implemented recently. PeerMark, an online peer review tool commonly employed in smaller educational settings, effectively mitigates the apprehension surrounding the potential infringement of students' intellectual property that may arise from using Originality Check (Roll, 2017). Researchers and educators are increasingly becoming interested in this phenomenon.

One of the major concerns of applied linguistics is language proficiency, yet it is a challenging term to define. Ellis (2003) therefore considered the CAF triad as the essential element of proficiency. As a result, it emerged as the primary topic of writing in applied linguistics studies. According to Housen & Kuiken (2009), "CAF has been used both as performance descriptor for the oral and written assessment of language learners as well as an indicator of

learners' proficiency underlying their performance". According to CAF, the concept of complexity pertains to students' proficiency in generating diverse and refined language. Accuracy, as defined by Ellis (2008), denotes the extent to which students can produce language that is devoid of errors. Fluency, on the other hand, is assessed by considering the quantity of language output. The predominant measure of fluency is quantifying the total number of words produced within a specified time frame (Plakan et al., 2019; Johnson et al., 2012).

Several studies compared FTF and WB peer reviews. The findings of the previous research indicated that the FTF peer review had a greater impact on student engagement compared to the WB peer review (DiGiovanni & Nagaswami, 2001; Ho & Savignon, 2007). DiGiovanni & Nagaswami (2001) examined the two forms of peer review to determine the viability of web-based (WB) as a potential alternative to face-to-face (FTF) interactions. They concluded that FTF involves students in conversations and communication, which WB peer review lacks. In their study, Ho & Savignon (2007) investigated the attitudes of Thai college students towards face-to-face (FTF) and web-based (WB) peer review. According to the study's findings, the participants preferred FTF communication over WB communication. The data additionally demonstrated that the outcomes of face-to-face peer review were more effective because they enhanced argumentation about mistakes. De Guerrero & Villamil (2000), and Donato (1994) also concluded that because FTF enhances interaction, it can be more effective for writing improvement and revision. Furthermore, Lundstrom & Baker (2009) concluded that both students who produced peer reviews for their classmates and those who underwent the process of peer review experienced enhanced writing proficiency. However, when the researchers compared the two groups, they figured out that the former exhibited superior writing quality compared to the latter.

On the other hand, other studies have reported the effectiveness of OLPR since it can provide a forum for collaboration, social learning, and engagement (DiGiovanni & Nagaswami, 2001; Hsieh, 2020; Moloudi, 2011; Pritchard & Morrow, 2017; Purchase & Hamer, 2018). Taylor et al. (2015) and Purchase & Hamer (2018) also asserted that OLPR significantly affects students' writing performance. Warschauer (1996), in a study on 16 students, demonstrated that the OLPR forum helps students with low social skills contribute more than they did in FTF peer review. Warschauer also reported that OLPR helps students overcome socioemotional challenges and decreases anxiety. Breuch (2004) also concluded that students prefer OLPR as it affords individuals additional time and a sense of ease, they can provide feedback within a setting that is devoid of intimidation. Hine (2017) conducted a comparative study on students from two universities, where one university implemented online learning and peer review (OLPR), while the other university utilized face-to-face (FTF) instruction. The results revealed that OLPR is more effective and it helps students overcome shyness. Ho & Savigno (2007) also investigated the sophomore students' attitudes toward FTF and CMPR in Taiwan and reported that students favored the former.

Consequently, the primary objective of this study was to examine the potential impact of utilizing web-based peer review, namely Peermark, on the enhancement of writing skills among Iranian English for Specific Purposes (ESP) students. To align with this aim, the subsequent research questions were raised:

RQ1: Does FTF-structured peer review have any effect on writing improvement?

RQ2: Does WB-structured peer review have any effect on writing improvement?

RQ3: Is there any statistically significant difference between the FTF and WB structured peer review on writing improvement regarding linguistic features?

METHOD

The study employed a quasi-experimental design, with control and experimental groups having a pretest-posttest. The pretest-posttest design is widely utilized in behavioral research to compare groups and measure changes resulting from experimental treatments. The study design involves the random assignment of subjects into two groups. In line with the design, any observable difference was attributed to the treatment.

A cohort of undergraduate students majoring in computer science, currently in their third year of study at Islamic Azad University in Iran, namely in Lahijan, actively engaged in an English language writing course. The course ran for approximately four months. The course's primary goal was to improve the student's English writing skills. All students were Iranian, and their native language was Persian. When the students enrolled in the course, their average age was approximately 21. Before enrolling in this course, the students lacked prior experience in an English academic writing course and had not engaged in any formal OLPR activities. According to the OQPT, the student's language proficiency was intermediate. In an FTF discussion with all the students, the course's objectives, outcomes, and writing assignments were explained. Additionally, they were provided with some information regarding the value of peer evaluation and the general guidelines for good peer review techniques. The students, in the experimental group, become familiar with the WB peer-review system. They received instructions on how to submit the writing, comment to their peers, and resubmit the material again after revision. Moreover, they watched a tutorial video (through turnitin.com) which suggested how to be respectful, detailed, and constructive in their comments. The students in the control group, on the other hand, practiced peer feedback on the paper and had an FTF interaction.

The data collection tools used were as follows: Peermark is a peer review assignment tool that is available through Turnitin. Through this peer-review system, students must first submit their final drafts online. They are, thereafter, given individualized instruction on what and how to evaluate their coursemates' papers, employing the instructors' criteria. For each assignment, different sets of criteria were prepared. Each student who turned in an assignment received a randomly selected paper to review. Based on the standards and criteria established for the assignment, each article reviewer should offer a numerical scale, an analysis, and recommendations. To eliminate reciprocity and its effects, both reviewers and reviewees were anonymous. With the anonymity features, the student's attention was drawn to the given assignment, and the peer review rating provided them with an incentive for effort.

An Oxford Quick Placement Test (OQPT, 2008) was used to assess the participants' general language proficiency level at the beginning of the study. The test's internal consistency was calculated using the KR21 formula, and the reliability index was reported as (.79). Furthermore, three language experts evaluated it to confirm its authenticity, and the follow-up version of the main study incorporated their feedback. The grammar part of OQPT contained 60 multiple-choice and fill-in-the-blank questions. For this study, just the grammar section was presented to students because this part is a paper-and-pencil test, the same as the pretest and posttest, for merely evaluating EFL learners' grammatical and semantic knowledge as an index of their linguistic knowledge.

During three distinct sessions, the participants were instructed to engage in a 60-minute integrative writing exercise. To mitigate the potential for academic dishonesty, the questions for the pre-test and post-test were intentionally modified to introduce modest variations. All the prompts were centered around the domains of education and technology, as these themes were well-known to the students. The reading materials addressed to similar subject matters and aimed to facilitate the generation of ideas for constructing arguments.

The measurement of second language (L2) proficiency has been a subject of investigation in numerous applied linguistic research studies, as noted by Ellis (2003 & 2008). These studies have commonly employed the multicomponent CAF as a means of assessment. As a result, the triad is considered a precious measurement variable for assessing both language proficiency and oral and written skills (Housen & Kuiken, 2009).

The term complexity is used in the context of L2 writing research that focuses on evaluating learners' written production rather than task or cognition complexity (Housen & Kuiken, 2009) and is defined as "the extent to which language produced in performing a task is elaborate and varied" (Ellis, 2003). Lexical, grammatical/syntactic, propositional, and interactional complexity are only a few of the sub-constructs that make up linguistic complexity (Blute & Housen, 2014). Increasingly, syntactic complexity has been conceptualized as a multidimensional phenomenon, requiring various, appropriate metrics for each dimension (Bulte & Housen, 2014; Lu, 2011; Norris & Ortega, 2009). The present investigation employed the widely recognized and valuable

measure of grammatical complexity, the mean number of sentences per T-unit, as defined by Wolfe-Quitero et al. (1998). In other words, the researchers decided to utilize the definition of difficulty proposed by Wolfe-Quitero et al. due to the perceived teachability of the T-unit and phrase concepts.

According to Ellis (2003), accuracy refers to the absence of errors in a language task. Wolfe-Quintero et al. (1998) employ various measures to assess writing performance, including accuracy. The researchers quantify accuracy by evaluating the proportion of error-free T-units, the proportion of error-free T-units within a T-unit, and the proportion of errors present within a T-unit. Based on the first definition put forward by Wolfe-Quintero et al. (1998), the researchers in the present study evaluated accuracy among Iranian ESP students. Ellis (2003) defined fluency as "the extent to which the language produced in performing a task manifest pausing, hesitation, or reformulation".

In the current study, researchers employed Wolfe-Quintero et al.'s (1998) definition as a gauge of comfort in language production or the ease of language retrieval. The study spanned a 16-week semester. The study conducted two-hour sessions once a week. First, the students were required to take OQPT to make sure of the participants' language proficiency. In week 2, the researchers distributed a pretest of writing among students to homogenize them in terms of writing ability. As a result, the participants were chosen at random and were divided into two groups: a control group and an experimental group.

While the students in the control group followed the conventional method of writing, the students in the experimental groups became familiar with peer feedback in two different communication modes, including FTF and WB mode. According to the guidelines put forth by Rollinson (2005) and Min (2006), the researchers conducted a training session to introduce students in the FTF group to the peer review process. They discussed strategies for meaningful negotiations, such as defining the rhetorical goals and intentions of writers, identifying, and outlining issues and making specific recommendations. In sessions three and four, the researchers first discussed the goals and advantages of peer review before displaying examples of handwritten comments that provided precise correction instructions. Subsequently, the students were instructed to evaluate a model work using a peer review instruction page. Following the training session, students were paired up randomly to engage in the evaluation process of each other's papers. They then had an FTF discussion about the remarks.

The WB group was instructed to use Turnitin PeerMark as a tool for peer review. The primary features of Turnitin, such as PeerMark questions, commenting tools, composition marks, and originality reports, were explained to them. The next step was for the students to watch a YouTube tutorial that detailed how to use Turnitin for peer review. Following that, students engaged in a peer review trial exercise where they practiced providing feedback on brief paragraphs that their classmates had contributed, utilizing many Turnitin capabilities. Over the semester, all students used Turnitin to conduct double-blind peer reviews on three significant writing tasks, keeping both the reviewers' and the writer's identities a secret. Students engaged in peer review for about an hour in class for each assignment. The Turnitin website was used to collect students' original papers, provide feedback through the review tools, and respond to PeerMark inquiries.

For communication and meaningful negotiation, both experimental groups allowed participants to write comments and engage in peer discussions in either English or Persian. The main goal of the writing assignments was to familiarize students with the principles of academic writing in computer science. This was achieved by requiring them to provide commentary on resources that were specific to the domain as well as to compose integrative essays. The core principle of this course posits that the most effective way to develop proficiency in academic English writing is through immersion in the discipline itself, as it is highly specialized in terms of genre (Kuteeva, 2013). Students were therefore required to write about subjects covered in their computer studies. The researchers gave the students a reading on the topic before they composed the text.

Three Analyses of Covariance (ANCOVA) were employed to assess and compare the writing enhancement among different groups, focusing on linguistic attributes. This analysis was

conducted by utilizing the outcomes derived from two writing drafts, which encompassed pretests and posttests. SPSS was employed to generate descriptive statistics, specifically means and standard deviations, which were then presented for all variables.

FINDING AND DISCUSSION

Finding

The study used three ANCOVA tests to find out if there was a statistically significant difference between the FTF and WB groups in how well they improved their writing in terms of accuracy, complexity, and fluency for the three types of language. FTF and WB peer reviews were considered the independent variables, and writing was considered the dependent variable. The pretests of language proficiency and writing were the covariates.

Addressing the first research question

The study's first research question examined whether FTF-structured peer review could have any effect on writing improvement. To address the first question, the ANCOVA test with the pretest scores as a covariate was used. Table 1 displays the descriptive statistics for the writing scores of the two groups.

Table 1. The descriptive statistics for the writing scores of the control and FTF groups

Group_CF	Mean	Std. Deviation	N
control	15.08	1.48	36
FTF	37.18	4.54	38
Total	26.43	11.62	74

As shown in Table 1 above, the mean writing scores for the control and FTF groups are 15.08 and 37.18, respectively. The result of the ANCOVA test is shown in Table 2.

Table 2. The results of the ANCOVA test for the comparison of the writing scores

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	9079.975[a]	2	4.539.987	407.928	.000	.920
Intercept	1.289.040	1	1.289.040	115.823	.000	.620
Pre-Scores_C_F	50.273	1	50.273	4.517	.037	.060
Group_C_F	7.323.348	1	7.323.348	658.018	.000	.903
Error	790.187	71	11.129			
Total	61.572.000	74				
Corrected Total	9.870.162	73				

As shown in Table 2, there was a statistically significant difference in the writing scores between the control and FTF groups*: F* (1,71) = 358.01, $p < .05$, partial $\eta^2 = .9$. The first null hypothesis is therefore rejected, indicating that FTF structured peer review had a significant effect on writing improvement.

Addressing the second research question

The study's second research question examined whether WB-structured peer review could have any effect on writing improvement. The researchers conducted an ANCOVA test. Table 3 displays the descriptive statistics for the two groups' writing scores to address the second research question.

Table 3. The descriptive statistics for the writing scores of the control and WB groups

Group_C_W	Mean	Std. Deviation	N
control	150.833	148.083	36
WB	341.220	271.289	41
Total	252.208	981.356	77

The mean writing scores for the control and WB groups are shown in Table 2, 15.08 and 34.12, respectively. The results of the ANCOVA test are shown in Table 4.

Table 4. The result of the ANCOVA for the comparison of the writing scores of the control and WB groups

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	6954.876[a]	2	3.477.438	706.232	.000	.950
Intercept	875.084	1	875.084	177.721	.000	.706
PreScores_C_W	6.770	1	6.770	1.375	.245	.018
Group_C_W	4.702.843	1	4.702.843	955.100	.000	.928
Error	364.371	74	4.924			
Total	56.298.000	77				
Corrected Total	7.319.247	76				

As shown in Table 4, there was a substantial difference in the writing scores between the control and the WB groups: F (1,74) = 955.10, $p < .05$, partial $\eta^2 = .92$. Hence, the second null hypothesis is rejected, meaning that WB structured peer review had a significant effect on writing improvement.

Analyzing the third research question

The study's third research question probed whether there was any statistically significant difference between the FTF and WB structured peer review in improving writing. The researchers used the ANCOVA test to address the third research question. The descriptive statistics for the writing scores of the two groups are demonstrated in Table 5.

Table 5. The descriptive statistics for the writing scores of the FTF and WB groups

Group_F_W	Mean	Std. Deviation	N
FTF	371.842	454.322	38
WB	341.220	271.289	41
Total	355.949	399.204	79

In Table 5, the mean for the FTF and WB groups regarding their writing scores is 37.18 and 34.12, respectively. Table 6 below shows the result of the ANCOVA test.

Table 6. The results of the ANCOVA for the comparison of the writing scores for the FTF and WB groups

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	233.338[a]	2	116.669	8.782	.000	.188
Intercept	1.821.409	1	1.821.409	137.097	.000	.643
Pre-Scores_F_W	48.401	1	48.401	3.643	.060	.046
Group_F_W	153.095	1	153.095	11.523	.001	.132
Error	1.009.700	76	13.286			
Total	101.336.000	79				
Corrected Total	1.243.038	78				

According to Table 6, there was a statistically significant difference in the writing scores between the FTF and WB: F (1,76) = 11.52, $p < .05$, partial $\eta^2 = .13$. Thus, the third null hypothesis is rejected, meaning that the FTF group performed significantly better than the WB structured peer review in improving writing. The following Table 7 compare each writing component between the two experimental groups.

Table 7. Descriptive statistics of the components of writing scores in the FTF and WB groups

Group	Mean	Std. Deviation	N
Complexity, FTF	57.368	.94966	38
Complexity, WB	52.927	118.836	41
Accuracy, FTF	222.632	422.786	38
Accuracy, WB	125.122	224.858	41
Fluency, FTF	91.842	.95451	38
Fluency, WB	163.171	192.924	41

The mean scores for the FTF and WB groups regarding their complexity, accuracy, and fluency are 5.73, 5.29; 22.26, 12.51; and 9.18, 16.31, respectively. Table 8 below summarizes the results of the ANCOVA tests for the three components.

Table 8. Summary of ANCOVA results for the three components of writing

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Group-Complexity	3.73	1, 76	3.73	3.158	.080	.04
Group-Accuracy	1720.89	1, 76	1720.89	160.38	.000	.67
Group-Fluency	959.14	1, 76	959.14	399.39	.000	.84

The results show that there was not any statistically significant difference between *the* FTF and WB groups regarding complexity: F (1,76) = 3.15, $p > .05$, partial $\eta^2 = .04$. However, there was a statistically significant difference between the FTF and WB groups regarding accuracy: F (1,76) = 160.38, $p < .05$, partial $\eta^2 = .67$. Moreover, a statistically significant difference was found between the *FTF and WB* groups regarding fluency, F (1,76) = 399.39, $p < .05$, partial $\eta^2 = .84$

Discussion

The main purpose of the current study was to explore the impact of structured peer review on Iranian ESP students' writing. The findings of this study present a more promising outlook compared to many prior research endeavors (e.g., Carson & Nelson, 1996; Guardado & Shi, 2007) that indicated the ineffectiveness of peer review among Asian students engaged in English language learning.

The effect of FTF peer review on writing achievement

While some studies (Lin & Yang, 2013; Garcia et al., 2013) concluded that FTF cannot improve students' writing because the students maintain each other's faces, the findings of the present study, corresponding to Kumar and Aitchison (2018) and Hewett (2000), revealed that FTF enhanced students' writing. The underlying reason behind the inefficacy of FTF feedback, according to Liu et al. (2021), is that students do not like to disrupt group harmony, especially when they are not familiar with each other or have not established a rapport.

The effect of WB peer review on writing achievement

The findings of the present study are in line with AbuSeileek & Abualsha (2014), who conducted quantitative research to examine the impact of WB on revision and writing development and concluded that students receiving WB feedback achieved better scores than those who did not receive peer review. Pham & Usaha (2016) similarly reported that Vietnamese EFL students, after receiving WB feedback, provided more global comments, and made significant revisions to their essays. In the same vein, Li & Li (2017), having implemented the Turnitin PeerMark on American freshmen, figured out that the Turnitin PeerMark allowed the participants to provide feedback on multiple aspects without messing up the paper. Liang (2010) pointed out that WB plays a significant role in writing improvement and referred to the group dynamics and the use of face-saving strategies in WB mode as the underlying reasons for such improvement.

The effect of FTF and WB on linguistic features

In contrast with some studies (e.g., Awada & Diab, 2021; Hine, 2017; Hsieh, 2020), which asserted that WB surpasses FTF in enhancing writing, the statistical analysis of the data collected through the current study demonstrated that different modes of feedback lead to enhancement in different linguistic features. As a result, this study suggested using both modes of peer review to enhance the effect of peer review on students' writing achievement. Correspondingly, Liu et al. (2020), having conducted a study on doctorial students, suggested the combined use of feedback modes.

The current study found that WB affects students' writing fluency. Abri (2021), on the other hand, used a quasi-experimental design to look at 50 participants in a variety of WB processes and found that WB improved students' grammar range and accuracy. Shang's findings (2022) are in contrast with the results of the current study since they indicate that WB enhances students' writing accuracy. The findings also contradict Ruegg (2015), who concluded that to improve grammar and accuracy among students, teacher feedback is essential, not peer feedback. Furthermore, the findings contradict Link et al. (2020) findings, who conducted a study on 32 undergraduate English majors and reported sustained accuracy improvement over a long period. They asserted that the primary cause of this internalization stems from the automated feedback system, which prompts students to consistently seek out such feedback. Additionally, they contended that machines were unable to adequately capture the characteristics that have the potential to impact the complexity or fluency of written language.

In alignment with DiGiovanni & Nagaswami (2001), who concluded that WB interaction enhances fluency as compared with FTF, the researchers reported a significant enhancement in students' writing fluency. As DiGiovanni & Nagaswami (2001) stated, computers let the students work at their own pace and remain much more on task. This may be the underlying reason for the student's improvement in writing fluency. In the same vein, Warschaur (1996) considers technology as a platform through which less direct exchange happens, which can be another reason for writing fluency. Cheng (2007) also referred to the electronic mode of interaction as a less threatening way of providing comments, which enhances students' participation in giving feedback.

The findings corroborated some studies (Hine, 2017; Storch & Wigglesworth, 2010; Van Beuningen et al., 2012) in that peer review improves students' writing. In this regard, Ting & Qian (2010) investigated peer feedback on 11 EFL students in China. The text analyses of the students' drafts revealed that their drafts improved slightly in terms of fluency and great accuracy. The findings also concur with Biria & Jafari (2013), who researched 90 homogenous students, in that peer feedback affects students' writing fluency compared with no feedback group. However, the comparison of the two modes of peer feedback revealed that WB peer feedback enhanced the students' writing fluency at an intermediate level. A possible justification for the improvement is that peer review engages students in social interaction and allows them to learn from each other, which exemplifies Vygotsky's (1978) sociocultural theory, which emphasizes scaffolding.

CONCLUSION

The current study investigated the impact of two different types of peer review, namely FTF, and WB, on the enhancement of writing skills among ESP students. The study led to three findings: first, it revealed that FTF resulted in a significant improvement in ESP students' writing compared with the control group. Second, the WB group performed better than the group without peer review. Third, both the FTF and WB groups improved in writing achievement at the post-test, but not equally. While FTF affected the participants' linguistic accuracy, Turnitin, as a WB platform for peer review, enhanced writing fluency. The students belonging to the two groups showed no significant variation in linguistic complexity. Consequently, based on the outcomes of the current investigation, the researchers, in alignment with Sengupta (2001), DiGiovanni & Nagaswami (2001), Tuzi (2004), Fitze (2006), and Ho & Savignon (2007), emphasized the significance of integrating both modes of peer feedback in educational activities.

The findings have some pedagogical implications. Accordingly, based on the advantages of peer review, according to Breuch (2004) and Nicol et al. (2014), teachers are recommended to employ both forms of peer review in classrooms to maximize the advantage of each feedback approach and decrease the burden of writing. The teacher training courses are recommended to teach how to implement both modes of peer review and help novice teachers become familiar with various online platforms for giving feedback.

Since the issue of feedback (including peer feedback, teacher feedback, and electronic feedback) is one of the main issues in the success of English education and since technological advances are constantly improving and intruding into education, it seems necessary to conduct more research to examine the feasibility and usefulness of new technologies in writing education. Additionally, a qualitative examination of a larger sample size may be the best way to assess the effectiveness of Turnitin Peermark in writing classes. Moreover, the study only focused on linguistic features; further studies are required to provide a more comprehensive understanding of the potential impact of web-based peer feedback on discourse characteristics.

REFERENCES

Abri, A. A. (2021). Exploring EFL learners' comments on web-based peer feedback: Local and global revision. *English Language Teaching, 14*(6), 114-124. doi:10.5539/elt.v14n6p114

AbuSeileek, A., & Abualsha, A. (2014). Using peer computer-mediated corrective feedback to support EFL learners' writing. *Language Learning & Technology, 18*(1), 76-95. https://psycnet.apa.org/record/2014-11177-005

Awada, G. M., & Diab, N. M. (2023). Effect of online peer review versus face-to-face peer review on argumentative writing achievement of EFL learners. *Computer Assisted Language Learning, 36*(1-2), 238-256. https://doi.org/10.1080/09588221.2021.1912104

Berg, E. C. (1999). The effects of trained peer response on ESL students' revision types and writing quality. *Journal of Second Language Writing, 8*(3), 215–241. https://doi.org/10.1016/S1060-3743(99)80115-5

Biria, R., & Jafari, S. (2013). The impact of collaborative writing on the writing fluency of Iranian EFL learners. *Journal of Language Teaching and Research, 4*(1), 164-175. doi:10.4304/jltr.4.1.164-175

Blute, B., & Housen, A. (2014). Conceptualizing and measuring short-term changes in L2 wrting complexity. *Journal of Second Language Writing, 26*, 42-65. https://doi.org/10.1016/j.jslw.2014.09.005

Braine, G. (2001). A study of English as a foreign language (EFL) writer on a local-area network (LAN) and in traditional classes. *Computers and Composition, 18*(3), 275-292. https://doi.org/10.1016/S8755-4615(01)00056-1

Breuch, L. K. (2004). *Virtual peer review: Teaching and learning about writing in online environments*. Albay, NY: State University of New York Press.

Carson, J. C., & Nelson, G. L. (1996). Chinese students; perceptions of ESL peer response group interaction. *Journal of Second Language Writing, 5*(1), 1-19. doi: 101016/s1060-3743(96)90012-0

Chang, C. F. (2012). Peer review via three modes in an EFL writing course. *Computers and Composition, 29*(1), 63-78. https://doi.org/10.1016/j.compcom.2012.01.001

Chen, K. T. (2012). Blog-based peer reviewing in EFL writing classrooms for Chinese speakers. *Computers and Composition, 29*(4), 280-291. doi: 10.1016/j.compcom.2012.09.004

Cheng, M. C. (2007). Improving interaction and feedback with computer-mediated communication in Asian EFL composition classes: A case study. *Taiwan Journal of TESOL, 4*(1), 65-97.

Cho, K. (2004). *When multi-peers give better advice than an expert: The type and impact of feedback given by students and an expert on student writing.* University of Pittsburgh.

Cho, K., & MacArthur, C. (2010). Student revision with peer and expert reviewing. *Learning and Instruction, 20*(4), 328–338. http://dx.doi.org/10.1016/j.learninstruc.2009.08.006

Cho, K., & Schunn, C. D. (2004). The SWoRD is mightier than the pen: Scaffolded writing and rewriting in the discipline. In *IEEE International Conference on Advanced Learning Technologies, 2004. Proceedings. (*pp. 545–549). doi:10.1109/ICALT.2004.1357474

Cho, K., Schunn, C. D., & Charney, D. (2006). Commenting on writing typology and perceived helpfulness of comments from novice peer reviewers and subject matter experts. *Written Communication, 23*(3), 260–294. http://dx.doi.org/10.1177/0741088306289261

Cho, K., Shunn, C. D., & Wilson, R. W. (2006). Validity and reliability of scaffolded peer assessment of writing from instructor and student perspectives. *Journal of Educational Psychology, 98*(4), 891-901. Doi: 10.1037/0022-0663.98.4.891

De Guerrero, M. C. M., & Villamil, O. S. (2000). Activating the ZPD: Mutual scaffolding in L2 peer revision. *The Modern Language Journal, 84*(1), 51–68. https://doi.org/10.1111/0026-7902.00052

Digiovanni, E., & Nagaswami, G. (2001). Online peer review: An alternative face-to-face. *ELT Journal, 55*(3), 263-272. doi:10.1093/elt/55.3.263

Donato, R. (1994). Collective scaffolding in second language learning. In Vygotskian *approaches to second language research* (pp. 33–56). Westport, CT: Greenwood Publishing Group.

Ellis, R. (2003). *Task-based language learning and teaching*. Oxford: Oxford University Press.

Ellis, R. (2008). A typology of written corrective feedback types. *ELT Journal, 63*(2), 97-107. http:// doi.org/10.1093/elt/ccn023

Fitze, M. (2006). Discourse and participation in ESL face-to-face and written electronic conferences. *Language Learning and Technology, 10*(1), 67-86. Retrieved November 6, 2023, from https://www.learntechlib.org/p/74430/.

Garcia, E., Brown, M., & Elbeltagi, I. (2013). Learning within a connectionist educational collective blog model: A case study of UK higher education. *Electronic Journal of E-learning, 11*(3), 253-262. https://files.eric.ed.gov/fulltext/EJ1016291.pdf

Grabe, W., & Kaplan , R. B. (1996). *Theory and practice of writing*. Longman.

Guardado, M., & Shi, L. (2007). ESL students' experiences of online peer feedback. *Computers and Composition, 24*(4), 443–461. http://dx.doi.org/10.1016/j.compcom.2007.03.002

Hansen, J., & Liu, J. (2005). Guiding principles for effective peer response. *ELT Journal, 59*(1), 31-38. https://doi.org/10.1093/elt/cci004

Hewett, B. (2000). Characteristics of interactive oral and computer-mediated peer group talk and its influence on revision. *Computers and Composition, 17*(3), 265-288. https://doi.org/10.1016/S8755-4615(00)00035-9

Hine, L. A. (2017). *The impact of face-to-face versus online peer review on students' writing achievement*. Doctorial dissertation, Oakland University. Retrieved from: https://www.proquest.com/openview/f6b4590e024ef84d23791b781b0afcc0/1?pq-origsite=gscholar&cbl=18750.

Ho, M., & Savignon, S. (2007). Face-to-face and computer-mediated peer review in EFL writing. *CALICO Journal, 24*(2), 269–290. https://www.jstor.org/stable/24147912

Honeycutt, L. (2001). Comparing email and synchronous conference in online peer response. *Written Communication, 18*(1), 26-60. doi:10.1177/0741088301018001002

Housen, A., & Kuiken, F. (2009). Complexity, accuracy, and fluency in second language acquisition. *Applied Linguistics, 30*(4), 461-473. https://doi.org/10.1093/applin/amp048

Hsieh, Y. (2020). Learner interactions in face-to-face collaborative writing with the support of online resources. *ReCALL, 32*(1), 85–105. doi: https://doi.org/10.1017/S0958344019000120

Johnson, D., Mercado, L., & Acevedo, A. (2012). The effect of planning sub-processes on L2 writing fluency, grammatical complexity, and lexical complexity. *Journal of Second Language Writing, 21*(3), 264-282. https://doi.org/10.1016/j.jslw.2012.05.011

Kumar, V., & Aitchinson, C. (2018). Peer facilitated writing groups: A programmatic approach to doctorial student writing. *Teaching in Higher Education, 23*(3), 360-373. https://doi.org/10.1080/13562517.2017.1391200

Kuteeva, M. (2013). Graduate learners' approaches to genre-analysis tasks: variations across and within for disciplines. *English for Specific Purposes, 32*(2), 84-96. https://doi.org/10.1016/j.esp.2012.11.004

Lee, J. F., & VanPatten, B. (2003). *Making communicative language teaching happen*. McGraw-Hill.

Li, M., & Li, J. (2017). Online peer review using Turnitin in first-year writing classes. *Computers & Composition, 46*, 21-38. https://doi.org/10.1016/j.compcom.2017.09.001

Liang, M. Y. (2010). Using synchronous online peer response groups in EFL writing: Revision-related discourse. *Language Learning & Technology, 14*(1), 45-64. https://citeseerx.ist.psu.edu/viewdoc/download?rep=rep1&type=pdf&doi=10.1.1.215.3991

Lin, W. C., & Yang, S. C. (2011). Exploring students' perceptions of integrating Wiki technology and peer feedback into English writing courses. *English Teaching: Practice and Critique, 10*(2), 88-103. Retrieved November 6, 2023, from https://www.learntechlib.org/p/51550/

Link, S., Mehrzad, M., & Rahimi, M. (2020). Impact of automated writing evaluation on teacher feedback, student revision, and writing improvement. *Computer Assisted Language Learning, 35*(4), 605-634. https://doi.org/10.1080/09588221.2020.1743323

Liou, H. C., & Peng, Z. Y. (2009). Training effects on computer-mediated peer review. *System, 37*(3), 514-525. https://doi.org/10.1016/j.system.2009.01.005

Liu, F., Du, J., Zhou, D. Q., & Huang, B. (2021). Exploring the potential of peer feedback: The combined use of face-to-face feedback and e-feedback in doctorial writing groups. *Assessing Writing, 47*, 1-11. https://doi.org/10.1016/j.asw.2020.100482

Liu, J., & Hansen, J. G. (2002). *Peer response in second language writing classrooms*. University of Michigan Press.

Liu, J., & Sadler, R. W. (2003). The effect and affect of peer review in electronic versus traditional modes on L2 writing. *Journal of English for Academic Purposes, 2*(3), 193-227. https://doi.org/10.1016/S1475-1585(03)00025-0

Lu, X. (2011). A corpus-based evaluation of syntactic complexity measures as indices of college-level ESL writers' language development. *TESOL Quarterly, 45*(1), 36-62. https://doi.org/10.5054/tq.2011.240859

Lundstrom, K., & Baker, W. S. (2009). To give is better than to receive: The benefits of peer review to the reviewer's own writing. *Journal of Second Language Writing, 18*(1), 30-43. https://doi.org/10.1016/j.jslw.2008.06.002

Miao, Y., Badger, R., & Zhen, Y. (2006). A comparative study of peer and teacher feedback in a Chinese EFL writing class. *Journal of Second Language Writing, 15*(3), 179-200. https://doi.org/10.1016/j.jslw.2006.09.004

Min, H. T. (2005). Training students to become successful peer reviewers. *System, 33*(2), 293-308. https://doi.org/10.1016/j.system.2004.11.003

Min, H. T. (2006). The effects of trained peer review on EFL students' revision types and writing quality. *Journal of Second Language Writing*, *15*(2), 118–141. http://dx.doi.org/10.1016/j.jslw.2006.01.003

Min, H. T. (2008). Reviewer stances and writing perceptions in EFL peer review. *English for Specific Purposes, 27*(3), 285-305. https://doi.org/10.1016/j.esp.2008.02.002

Moloudi, M. (2011). Online and face-to-face peer review: Measures of implementation in ESL writing classes. *Asian EFL Journal, 52*, 4-22. http://asian-efl-journal.com/PTA/May-2011-Moloudi.pdf

Nicol, D., Thomson, A., & Breslin, C. (2014). Rethinking feedback practices in higher education: A peer review perspective. *Assessment and Evaluation in Higher Education, 39*(1), 102-122. https://doi.org/10.1080/02602938.2013.795518

Norris, J. M., & Ortega, L. (2009). Towards an organic approach to investigating CAF in instructed SLA: The case of complexity. *Applied Linguistics, 30*(4), 555-578. https://doi.org/10.1093/applin/amp044

Pham, V. P. H., & Usaha, S. (2016). Blog-based peer response for L2 writing revision. *Computer Assisted Language Learning, 29*(4), 724-748. https://doi.org/10.1080/09588221.2015.1026355

Plakans, L., Gebril, A., & Bilki, Z. (2019). Shaping a score: Complexity, accuracy, and fluency in integrated writing performances. *Language testing, 36*(2), 161-179. https://doi.org/10.1177/0265532216669537

Pritchard, R. J., & Morrow, D. (2017). Comparison of online and face-to-face peer review of writing. *Computers and Composition, 46*, 87-103. https://doi.org/10.1016/j.compcom.2017.09.006

Purchase, H., & Hamer, J. (2018). Perspectives on peer-review: Eight years of Aropa. *Assessment and Evaluation in Higher Education, 43*(3), 473–487. https://doi.org/10.1080/02602938.2017.1359819

Roll, N. (2017). *New salvo against Turnitin.* Inside Higher Ed. Retrieved from https://www.insidehighered.com/news/2017/06/19/anti-turnitin-manifesto-calls-resistance-some-technology-digital-age.

Rollinson, P. (2005). Using peer feedback in the ESL writing class. *ELT Journal, 5*(1), 23-30. https://doi.org/10.1093/elt/cci003

Ruegg, R. (2015). The relative effects of peer and teacher feedback on improvement in EFL students' writing ability. *Linguistics and Education, 29,* 73–82. https://doi.org/10.1016/j.linged.2014.12.001

Sengupta, S. (2001). Exchanging ideas with peers in network-based classrooms: An aid or a pain? *Language Learning and Technology, 5*(1), 103-134.

Shang, H. F. (2022). Exploring online peer feedback and automated corrective feedback on EFL writing performance. *Interactive Learning Environment, 30*(1), 4-16. https://doi.org/10.1080/10494820.2019.1629601

Storch, N., & Wigglesworth, G. (2010). Learners' processing, uptake, and retention of corrective feedback on writing. *Studies in Second Language Acquisition, 32*(2), 303-334. doi: https://doi.org/10.1017/S0272263109990532

Straumsheim, C. (2016). *Detecting more than plagiarism*. Inside Higher Ed. Retrieved from: http://www. Insidehighered.com/news/2016/01/21turnitin-expanding-beyond-plagiarism-detection-launches-revision-assistant.

Taylor, S., Ryan, M., & Pearce, J. (2015). Enhanced student learning in accounting utilizing web-based technology, peer-review feedback, and reflective practices: A learning community approach to assessment. *Higher Education Research, 34*(6), 1251–1269. https://doi.org/10.1080/07294360.2015.1024625

Ting, M., & Qian, Y. (2010). A case study of peer feedback in a Chinese EFL writing classroom. *Chinese Journal of Applied, 33*(4), 87-98. doi: http://www.celea.org.cn/teic/92/10120606.pdf

Topping, K. (2003). Self and peer assessment in school and university: Reliability, validity and utility. In *Optimizing new modes of assessment: In search of qualities and standards* (pp. 55-87). Springer, Dordrecht.

Tuzi, F. (2004). The impact of e-feedback on the revisions of L2 writers in an academic writing course. *Computers and Composition*, *21*(2), 217–235. http://dx.doi.org/10.1016/j.compcom.2004.02.003

Van Beuningen, C. G., De Jong, N. H., & Kuiken, N. F. (2012). Evidence on the effectiveness of comprehensive error correction in second language writing. *Language Learning*, *62*(1), 1–41. https://doi.org/10.1111/j.1467-9922.2011.00674.x

Vygotsky, L. S. (1978). Interaction between learning and development. In M. Cole, V. John-Steiner, S. Scribner, & E. Souberman (Eds.), *Mind and society: The development of higher psychological processes* (pp. 79-91). Cambridge, MA: Harvard University Press. https://www.scirp.org/(S(351jmbntvnsjt1aadkposzje))/reference/ReferencesPapers.aspx?ReferenceID=1929734

Wadhwa, G., Schulz, H., & Mann, B. L. (2006). Effects of anonymity and accountability during online peer assessment. *In Selected Styles in Web-Based Educational Research* (pp. 302-333). IGI Global.

Wang, M. J. (2004). A study on online peer feedback. *English Teaching and Learning, 29*(2), 63-77.

Warschauer, M. (1996). Computer-assisted language learning: An introduction. In Fotos S. (Ed.), *Multimedia language teaching* (pp. 3–20). Tokyo: Logos International.

Wolfe-Quintero, K., Inagaki, S., & Kim, H. Y. (1998). *Second language development in writing: Measures of fluency, accuracy, and complexity* (Tech. Rep. No. 17). Honolulu: National Foreign Language Resource Center.