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The Effect of Medium on the Message: Paper-and-Pencil vs. Electronic Teacher Corrective Feedback

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ABSTRACT

In this study, we examined the nature of teacher Corrective Feedback (TCF) in Paper-And-Pencil and Electronic modes by exploring the form and purpose of TCF and the strategies used to mark errors in the writings of undergraduate EFL students. We also investigated possible differences between the two modes. To this end, we randomly assigned the students to the control (PAP feedback) and experimental groups (E-feedback). Taking a mixed-method research design, we analysed data which included the first drafts of students' essays of the two groups in hard and soft copy forms. We used a modified version of Analytic Model for Corrective Feedback and Error Feedback Strategies profile to identify the nature of TCF. The results showed: a) higher percentage of E-feedback compared with PAP feedback; b) *make a grammar/mechanics comment/question, statement, or imperative* as the most frequently used feedback type in both groups; c) *underline/circle/ highlight the errors and underline/circle/highlight and categorise the errors* as the most frequent feedback strategies in the control and experimental group respectively; and d) significant differences in the nature of feedback between the two modes. The findings suggested the medium (mode) by which feedback was provided affected the nature of the message given to the students. The outcome of this study is useful for writing instructors.

Keywords: Teacher corrective feedback (TCF), paper-and-pencil feedback (PAP), electronic feedback (E-feedback), feedback types and strategies

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INTRODUCTION

Providing of feedback to students has always been a major issue in the field of

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second language teaching and learning; in particular, teacher corrective feedback (TCF) continues to play its role as the primary response method since "altering students to their strengths and weaknesses can provide the means by which they can assess their performance and make improvements to future work" (Weaver, 2006, p. 379). Feedback is also one of the major criteria affecting students' judgment about quality of a course (Yang & Durrington, 2010). Over the last few decades, changes in writing pedagogy have led to more contemporary modes of feedback, one of which is the electronic feedback (E-feedback).

To date, in many educational contexts like Iran, Paper-and-Pencil (PAP) feedback is the only type of feedback, and foreign language educators are exploring ways to to cope with the inconvenience of this feedback mode and thus, are seeking better alternatives. Teacher feedback has been criticised for being time-consuming, frustrating, vague, idiosyncratic, inefficient and inaccurate, to name a few (Guénette, 2007; Lee, 2008; Mahmud, 2016; Truscott, 1996; Zamel, 1985). On the other hand, application of new educational technologies, characterised by Levy's (1997) Computer Assisted Language Learning (CALL), has significantly changed how students write, how they deliver their work, how they are given feedback, and how they perceive the feedback and alternatives for teachers' written corrective feedback (Chang et al., 2012; Li & Cumming, 2001). Hence, it is expected that CALL, using Word-Processor (such as Microsoft Office) as a means of producing feedback which is delivered through email acts as a tool or a convenient medium of feedback production and delivery for instructors but also as a motivator for students. Some students simply prefer to use a computer because they find it more enjoyable (Bangert-Drowns, 1989), and consider it as more convenient since they do not have to respond to it immediately in real time (DiGiovanni & Nagaswami, 2001).

Despite the convenience and many feedback opportunities that technology offers, so far, few studies have explored the nature of E-Feedback and speculated how feedbacks created on computers may differ from those produced by the traditional method. Accordingly, how the medium affects the message or, in other words, how feedback produced on papers and those produced electronically on the screen differ in terms of their nature, i.e. form, purpose and strategies requires more in-depth investigation. Therefore, the current study is an attempt to address this issue.

Literature Review

The process of writing "is mediated both by the available cultural tools such as pen and paper and electronic media" (Barnard & Campbell, 2005, p. 89). Thus, computers can be employed to write easier, more, differently, and effectively (Pennington, 1996, 2003). They help teachers to provide more efficient feedback. Feedback is generally conceptualised as "input from a reader to a writer with the effect of providing information to the writer for revision" (Keh, 1990, p. 294). Karim and

Ivy (2011) stretched the definition to include "any response (even facial expression) from the teacher reader to the student writer's writing at any stage of the writing process" (p. 31). Students expect to receive feedback specifically on their writings and that absence of feedback conveys to the students that their message has not been communicated effectively (Sommers, 1982).

Traditionally, students received written corrective feedback; however, with the advent of ICT E-feedback, a form of "automated feedback provided by a computer" (Ware & Warschauer, 2006, p. 3), became popular. Compared with written feedback, E-feedback is time- and place-independent, yields greater sense of autonomy, has less delivery effort, and involves no negotiation of meaning (Chang et al., 2012; Tuzi, 2004). There is increasing evidence highlighting students' positive attitude towards computer-generated feedback which helps them to improve on their writing skills (Bitchener, 2008; Budge, 2011; Chang et al., 2012; Jackson, 2014; Ho & Savignon, 2007; Stevenson & Phakiti, 2014; Tsui, 2004).

A strand of research examines the potential effectiveness of software-generated feedback over the PAP human feedback. The findings of these studies showed that computers can facilitate teacher's commentary on students' writings using electronic cut and paste, keeping track of the feedback the teacher has given to which students, and marking on-screen using a colour-coding scheme in which different colours represent specific types of errors (Peretz, 2005). The efficacy of email as an asynchronous medium on writing instruction has also been investigated. Among others, time independence (Warschauer, 1999; Lightfoot, 2006), speedy delivery (Chang et al., 2012; Huett, 2004; Lightfoot, 2006), increase in student's motivation (Warschauer, 1999), grammatical accuracy (Gonzalez-Bueno, 1998), editing and revising work easily, reduction in paperwork problems such as lost or forgotten papers (Sullivan, Brown, & Nielson, 1998), and being less worried about making mistakes (Pennington, 1996) are reported to be its major benefits. Peretz (2005) argued that "one-on-one writing consultancies via email, on-screen marking using colour coding, the editing tool and comment function, and email submission of written assignments have proven to be more effective than the traditional paper submission and PAP 'correction' of assignments" (p. 62). These benefits become clear usually when researchers take a comparative approach involving both PAP and electronic modes to address this topic. Exploring the differences between typed and handwritten TCF, Abuseileek (2006) found that the experimental group who used word-processor to produce their writing had more opportunity for self-learning, and the use of a variety of word applications such as checking grammar, style, editing text, etc. resulted in the improvement of their writing. Students in Denton, Madden, Roberts, and Rowe's (2008) study also perceived e-feedback as more valuable than handwritten feedback. Consistent

with the above findings, Chang et al.'s (2012) study indicated students' preference for E-feedback (68%) over handwritten feedback (34%) based on six criteria of accessibility, timeliness, legibility, quality, personable, and miscellaneous.

Despite the potential benefits of computer-generated feedback, a group of researchers, however, point to the inefficiency of particular features of software programs (Liu & Sadler, 2003), poor typing skills (Bohlke, 2003), and lack of experience in giving E-feedback (Russell & Haney, 1996); hence, it is suggested that successful impact of word-processing on ESL writing requires assessing several intervening factors such as the context of use and the software chosen (Pennington, 1993). Type, function, and form of feedback given on students' written work as well as strategies used by the teachers to offer feedback have also been addressed in some studies. In his study, Byrne (1988) found minimal marking of indirect feedback as more effective than direct teacher's feedback. Likewise, Lalande (1982) observed that students receiving indirect feedback reduced their errors over time more than students receiving direct feedback. Ferris (2002) dealt with selection, time and error correction delivery. She found that teachers mainly used indirect feedback such as circling and coding errors. They only used direct feedback such as the provision of the correct form when errors were untreatable. Chandler (2003) showed that teacher's use of editing tools and underlining with description (e.g. pink for errors to be corrected by the students and green for questions indicating clarification, rewriting, etc.) led to significant writing improvement. On the other hand, Ferris (2006) found that error corrections by teachers ranged from direct feedback to corrections judged as 'unnecessary'. Lee (2008), similarly, found that the teachers mostly used overt corrections (underline/ circle the errors/and provide corrections) and the degrees and types of error feedback strategies varied from one teacher to another. For example, in this study, teacher A used a great deal of feedback coded as categorising errors with error codes which were not used by teacher B at all.

While these are valuable and praiseworthy findings, they do not shed light on the nature of the feedback (e.g., Bitchener, 2008) provided through written and electronic modes; hence, some studies specifically concentrated on the form and purpose of different TCF types provided through different modes and the findings of these studies showed mixed results. Form-focused feedback is perhaps the most common feedback given on students' work by the teachers (Chandler, 2003; Ellis, 2016; Ferris, 2006; Lee, 2008; Lightbown & Spada, 1990). However, Truscott (1996) challenged the efficiency of this form of feedback after reviewing many research studies and argued that grammar correction by L2 teachers is insufficient and ineffective. Subsequently, more attention was given to content-based feedback which mainly focused on meaning (Heffernan, Otoshi, Kaneko, 2014; Kepner, 1991; Magno & Amarles, 2011; Zamel, 1985). Fathman

and Whalley (1990) showed that both grammar and content feedback positively affected rewriting. In a more recent study, Rastgou (2012) evaluated the provision of content-based feedback compared with form-based feedback and found that the former considerably improved the general performance of students, albeit not grammar and spelling, indicating that teachers should not waste time correcting grammar. Overall, there is a consensus among scholars that best results are achieved when a dual focus on form-focused and meaning or content-focused feedback are provided (Al-Jarrah, 2016; Ellis, 1994; Ferris, 1995, 1996; Shang, 2007).

A more recent strand of research was pioneered by Ferris, Pezone, Tade, and Tinti in 1997. These researchers investigated rhetoric of teacher comments through measures of length, types, use of hedges and text-specificity of teacher comments to analyse the compositions written by a group of ESL university students. They observed that most of the marginal comments were short or average while the end ones were average and long which showed they were comprehensive. The teacher included few hedges such as *Can you give an example?* and most of the comments were text-based. Moreover, the most common type of marginal note was *ask for information* whereas the most frequent type of end note was *positive comment*. In a follow-up study, Ferris (1997) investigated the nature of commentary and categorised teacher commentary according to its linguistic forms, i.e. declaratives, questions and imperatives, and found that teachers asked a lot of questions on students' drafts with the purpose of eliciting more information. Of all teacher commentary types, *imperatives* had the lowest rate. Due to the significance of this study, other researchers also tried to explore rhetoric of teacher commentary in other contexts. Martin (2011) used the measure developed by Ferris to investigate students' revision on rough drafts. Although the overall effect of teacher commentary on revision was positive (56.3%), some differences were observed between the two studies. In his study, unlike Ferris', most comments were short, *ask for information* was the most frequently used comments by the teacher, and most comments were generic. Similarly, Rezaei (2012) studied the nature and rhetoric of teacher comments by replicating Ferris's study in the Iranian educational context and compared the results with those of Ferris'. Her examination of 81 first drafts of the students' essays showed that in both studies, marginal comments were more frequent than the end comments and *making a grammar/mechanics comment* was a frequently addressed comment. Her study suggested that the type of comment is an indicator of success than comment on characteristics such as length.

Thus, there have been many studies on teacher corrective feedback. The studies reflected a growing interest in use of technology as a more efficient means of feedback provision and as an alternative to the traditional PAP TCF (Gonzalez-Bueno, 1998; Huett, 2004; Lightfoot, 2006; Pennington, 1996; Sullivan, Brown, &

Nielson, 1998; Warschauer, 1999), due to its contribution to improving students' writing skills (Abuseileek, 2006; Budge, 2011; Chang et al., 2012; Jackson, 2014; Ho & Savignon, 2007; Li, 2010; Li & Cumming, 2001; Tsui, 2004; Ware & Warschauer, 2006); yet, the contradictory findings of some studies which highlight the negative side of E-feedback (Bohlke, 2003; Liu & Sadler, 2003; Pennington, 1993) call for a need for further investigation of computer-generated TCF. Moreover, whereas most of the research studies dealt with the type of TCF (Byrne, 1988; Ellis, 1994; Fathman & Whalley, 1990; Ferris, 1995, 2002; Lalande, 1982; Lee, 2008, Shang, 2007), and its subsequent effect on students' writing improvement (Chandler, 2003; Weaver, 2006, Tuzi, 2004), there has been a dearth of studies that addressed the nature of TCT (Rezaei, 2012; Martin, 2011, Ferris et al., 1997; Zhang, 1995). In addition, many researchers emphasise the need for future studies to overcome uncertainties concerning the most effective means of responding to student writings, (Ferris, 1995, 1997, 2006; Warschauer, 2006; Gonzalez-Bueno, 1998; Peretz, 2005; Hyland & Hyland, 2006a & b; Hyland, 2010), and investigating rhetoric of corrective feedback offers valuable insights (Ferris, 2010) because without understanding the nature of feedback, the real effectiveness of it cannot be realised (Stevenson & Phakiti, 2014). The present study is, hence, designed to address these gaps identified through extensive review of literature.

Objectives of the Study

The present study was aimed at exploring the nature of TCF in two traditional paper-based and modern digital modes to understand how medium (computer vs pen) can affect the message (nature of the feedback). For the purposes of this study, the nature of feedback refers to the form, purpose, and strategies used by the teacher to detect errors. This study was motivated by the fat despite overwhelming interest in the use of electronic TCF in Asian academic settings like in Iran, the real nature and effect of E-feedback s remained unknown. Thus, addressing this problem is crucial and the findings hopefully contribute to the existing literature and indicate how the nature of feedback may vary from one mode to the next. To account for potential advantages of E-feedback over PAP feedback, the current study took a comparative approach where two feedback modes were employed in two writing classes. Accordingly, the current study sought answer to the following questions:

1- What is the form and purpose of teacher corrective feedback in PAP and electronic modes of feedback?

2- Is there any difference between the form and purpose of teacher corrective feedback in PAP and electronic modes of feedback?

3- What are the corrective feedback strategies used by the teacher in PAP and electronic modes of feedback?

4- Is there any difference between the corrective feedback strategies used by

the teacher in PAP and electronic modes of feedback?

METHOD

Fifty undergraduate students, both male (N = 17) and female (N = 33), majoring in English Literature in a private university in Shiraz, Iran were selected through convenience sampling. All the participants were native speakers of the Farsi language and were aged between 19 and 25 years.

The participants were enrolled in an advanced writing course as one of the obligatory courses of the programme, and were placed in two writing classes with each class consisting of 25 students. The *Practical Writer with Readings* by Bailey and Powell (1989, 2nd Ed.) was taught in this one-semester course (16 weeks). Classes were conducted once weekly for 100 minutes.

The two writing classes were randomly assigned to control and experimental groups. Students in the first class (control group) received the traditional PAP feedback, while those in the second class (experimental group) received the treatment, that is, they were instructed on how to use the computer (Microsoft Word Office, version 2003-2007, 2010) to produce their essays, use email as a means of delivery, and submit the writings to the teacher within the deadlines determined by the teacher each week. All the essays or written assignments were later reviewed by the teacher who provided PAP feedback on hard copy, handwritten essays of the students in the control class, and E-feedback on the soft copy of the students' essays in the experimental class using different strategies including writing comments on margins, underlining, circling the errors, and functions of Microsoft Office, such as comment boxes and colour codes. The source of data for analysis included the first draft of students' essays in the two classes in the form of hard copy for handwritten essays which were handed to the instructor in person, and the soft copy for the computer-generated essays in the experimental class which were systematically saved in a mailbox, organised by participants and paired-up with the corresponding teacher's responses for further analysis and retrieval. Students in each class produced 5 first drafts of essays and a total of 245 essays were collected which comprised the corpus data used in this study.

The study adopted a mixed-method research design (Baran & Jones, 2016; Riazi & Candlin, 2014) and incorporated both quantitative and qualitative methods for data analysis. First, to answer the first research question, that is, to identify the type and nature of TCF, the teacher's feedback in both modes was identified and codified using a modified version of Analytic Model for Corrective Feedback (Ferris, 1995). This model allows the examination of several features of feedback including their length, type, text-specificity, and place of feedback of which only the type of feedback (form and purpose) was the focus of the current study. To ensure the reliability of data, the essays were codified by the first researcher and another proficient rater in the department of language and the

inter-rater reliability computed by Pearson Correlation Coefficient was reported as 97.1 suggesting that the codification had an acceptable rate. Next, to answer the third research question, that is, to identify TCF strategies employed by the teacher to mark the errors in the two modes of feedback, data was analysed using a modified version of the profile of 'Error Feedback Strategies' proposed by Lee (2008). Afterwards, e data obtained from both profiles were subjected to inferential and descriptive statistics using SPSS software (.19) where the frequency, percentage, Mean and Standard Deviation of types of TCF were computed in both PAP and E-feedback modes to provide quantitative data for discussion purposes and to account for the possible differences that existed between the two feedback modes. To elaborate, in order to answer research questions 2 and 4, 15 independent t-tests were performed and the mean of eight feedback types and seven feedback strategies in the PAP and electronic feedback modes were compared. The results of statistical analysis were presented in appropriate tables.

RESULTS AND DISCUSSION

The Form and Purpose of TCF in PAP and Electronic Modes

To answer the first research question, descriptive statistics was performed and the frequency, percentage, mean, and SD of different feedback types (which refers to form and purpose of feedback) were computed and the results presented in Table 1.

Table 1
Descriptive statistics for the types of TCF in the control and experimental groups

Feedback forms and purposes		Control group			Experimental group		
		Percent (No)	Mean	SD	Percent (No)	Mean	SD
1	Ask for information/question	15.63 (93)	1.86	1.03	9.70 (85)	1.70	.64
2	Make a request/question	9.07 (54)	1.08	.63	6.85 (60)	1.24	.51
3	Make a request/statement	7.56 (45)	.90	.46	10.03 (88)	1.76	.71
4	Make a request/imperative	17.99 (107)	2.14	1.39	14.13 (124)	2.48	.50
5	Give information/question	4.87 (29)	.58	.64	4.90 (43)	.87	.33
6	Give information/statement	6.90 (41)	.82	.66	21.90 (192)	3.84	.79
7	Make a positive comment/ statement or exclamation	10.42 (62)	1.24	.91	8.20 (72)	1.44	.50
8	Make a grammar/mechanics comment/ question, statement, or imperatives	27.56 (164)	3.28	1.61	24.29 (213)	4.26	1.36
	Total	595 (100)	1.48	.89	877 (100)	2.19	1.23

According to Table 1, teachers offered more electronic (N=877) than PAP (N=595) feedback; hence, the total mean of the experimental group was higher than that of the control group (M = 2.19 vs. 1.48). *Make a grammar/mechanics comment/question, statement, or imperative* was the most frequently used type in both experimental (24.29%) and control (27.56%) groups as also indicated by the mean scores (4.26 & 3.28 respectively). *Give information/ statement* with 21.90% and the mean of 3.84, was the second frequently used type of TCF (E-feedback) in the experimental group where it had a low percentage (6.90%) in the control group (M = .82).

Make a request/imperative with 14.13% was the third highly used E-feedback type in the experimental group which was also the second most frequent type of PAP feedback in the control group with 17.99% and the mean of 2.14. The third most frequent feedback type in the control group was *Ask for information/question* with 15.63% and the mean of 1.86 which had a rather low percentage in the experimental group with 9.70% (M = 1.70).

With regard to the less frequent TCF types, *Make a request* in the statement form had more occurrence in the experimental group with 10.03% (M =1.76) whereas it had more occurrence in the control group in its question form with 9.07% (M = 1.08). *Make a positive comment/ statement or exclamation* also had a higher percentage in the PAP mode (10.42%) than in the electronic mode (8.20%). *Give information/question* was the least frequently used feedback in both control (M = .58) and experimental groups (M = .87) with approximately the same percentage (4.87% & 4.90%, respectively).

These findings are consistent with those of Rezaei's (2012) indicating that *make a grammar/mechanics comment* (42%) and *Give information/ statement* (20%) were the most common types of marginal comments and *make a request/question* was the least offered feedback type. Likewise, in Martin's (2011) study, *make a grammar/mechanics comment* with 47.9% was the most common feedback type. However, these findings do not corroborate with those of Ferris' (1995) which indicated that the majority of marginal comments centred on *ask for information/question* (31%). This lack of consistency in the results of these studies implies that the nature of feedback given by teachers varies across different contexts and different teachers place emphasis on different aspects of writing. According to the results presented here, in the educational context of this study, the teachers provided feedback on linguistic problems than on other important aspects of writing including organisation and content; the TCF, regardless of its mode, was mainly form-focused than meaning-focused as shown in some previous studies (Chandler, 2003; Ellis, 2016; Lee, 2008; Lightbown & Spada, 1990), and it reflected the teachers' view on the nature of language and what constitutes its major components.

It is also noteworthy that frequent use of one feedback form (e.g., imperatives, statement, and question) may reduce the

chance of using other forms. For example, the results showed that the use of *make a request* in the imperative form was more common than using it in the statement form (17.99% vs. 7.56%) in the control group and this might be related to the rhetoric and functions which are more common in any given language.

Finally, the higher proportion of E-feedback compared with PAP feedback provided by the teacher in this study can imply that, E-feedback is a mode of feedback favoured by teachers (Mahmud, 2016). Similarly, this form of feedback is likely to be favoured by the students as well because the latter may perceive E-feedback as more valuable than handwritten feedback (Abuseileek, 2006; Budge, 2011; Denton et al., 2008). Also, they usually prefer more specific comments on their written work which is more feasible using the electronic mode. However, greater feedback does not necessarily result in better outcomes and teachers and instructors might have different perceptions about how much feedback is adequate (Leki, 1990; McMartin-Miller, 2014).

Difference between TCF Form and Purpose in PAP and Electronic Modes

In order to answer the second research question, that is, to identify possible differences in form and purpose of TCF in the PAP and electronic modes, eight t-tests (inferential statistics) were administered and the mean scores of both groups with regard to every feedback type were compared. The results are summarised in Table 2 which shows the mean difference between both groups was significant only in four types of feedback: *Make a request/statement* (.000<.01), *Give information/question* (.005<.01), *Give information/statemen*t (.000<.01) and *Make a grammar/mechanics comment/questio*n*, statement, or imperatives* (.001<.01).

Table 2
Results of Independent T-test for comparing the types of TCF in PAP and electronic modes

Feedback types		Mean Difference	Std. Error Difference	Sig.
1	Ask for information/question	.160	.172	.355
2	Make a request/question	-.160	.115	.170
3	Make a request/statement	-.860	.120	.000
4	Make a request/imperative	-.340	.210	.109
5	Give information/question	-.297	.102	.005
6	Give information/statement	-3.02	.145	.000
7	Make a positive comment/statement/ exclamation	-.200	.147	.179
8	Make a grammar/mechanics comment/ question, statement, or imperatives	-.980	.299	.001

The results suggested that the medium by which feedback was provided (PAP and Electronic) by the teacher, to some extent, had an impact on the students because the difference was significant only in four out of the eight feedback types. However, the medium did have an impact on the frequency of feedback. In all of these categories, the rate of E-feedback was higher than that of the PAP feedback. That the teacher provided more E-feedback than PAP feedback suggests that electronic mode can be a more convenient tool for provision of feedback (Gonzalez-Bueno, 1998; Pennington, 1996, 2003; Peretz, 2005; Sullivan et al., 1998). One reason maybe that writings produced electronically are neater than those produced manually. In the traditional paper-based writings, teachers usually face lack of space in the margins to include their feedback so they decide to provide general summative feedback at the bottom of the papers which are usually less specific and less effective (Chandler, 2003, Zamel, 1985). On the other hand, teachers using electronic mode have many other choices from giving comments in the margins to inserting comment boxes, arrows, etc. to provide more specific feedback close to the problems where they are not ignored by the students (Peretz, 2005).

The Strategies of TCF in PAP and Electronic Modes

Table 3 shows the results of descriptive statistics (frequency, percentage, mean, & SD) of the feedback strategies that the teacher employed in the two modes of feedback in order to answer the third research question.

According to Table 3, the frequency (1244) and overall mean (3.60) of strategies used in the experimental group was larger than the frequency (915) and overall mean (2.61) of the control group. Strategies A and E, *underline/circle/ highlight the errors* and *give a hint about the errors by putting a mark in the margin* with 27.43% and 23.28%, and the mean of 5.02 and 4.26, respectively comprised the highest proportion of feedback strategies in the control group (PAP). Strategy G, none of the above with 21.20% also comprised a high proportion in this group (M = 3.88).

Table 3
Descriptive statistics for the TCF strategies in the PAP and electronic mode of feedback

Feedback strategies		Control group			Experimental group		
		Percent (No)	Mean	SD	Percent (No)	Mean	SD
A	Underline/circle/ highlight the errors	27.43 (251)	5.02	.97	24.27 (302)	6.04	1.10
B	Underline/circle/highlight the errors/and provide corrections	14.97 (137)	2.74	.77	10.20 (127)	2.54	.50
C	Underline/circle/ highlight and categorise the errors	4.49 (41)	.82	.48	33.11 (412)	8.24	1.59
D	Underline/circle/ highlight, and categorise the errors, and provide corrections	8.63 (79)	1.58	.73	17.12 (213)	4.26	1.06
E	Give a hint about the errors by putting a mark in the margin	23.28 (213)	4.26	.98	0 (0)	.00	.00
F	Give a hint about the errors by categorising them in the margin	0 (0)	.00	.00	14.06 (175)	3.50	1.03
G	None of the above	21.20 (194)	3.88	.98	2.65 (33)	.66	.59
	Total	915 (100)	2.61	1.88	1244 (100)	3.60	2.90

On the other hand, strategy C, *underline/ circle/highlight and categorize the errors* with 33.11% ranked the highest in the experimental (E-feedback) group (M = 8.24) which had a very low percentage in the control group (4.42%, M = .82). However, having a high proportion by 24.27% similar to the control group, *Underline/circle/ highlight the errors* ranked the second (M = 6.04). Strategy D, *underline/circle/ highlight, and the errors*, and provide corrections with 17.12% was the next frequently used component in this group (M = 4.26).

With regard to strategy B, it had roughly the same mean in the control and experimental groups (2.74 & 2.54, respectively). Interestingly, strategies E and F were not applicable to either PAP or E-feedback groups; to elaborate, *give a hint about the errors by categorising them in the margin* was not the strategy employed in PAP mode at all (0.0%), and *give a hint about the errors by putting a mark in the margin* was not the strategy used in the electronic mode (0.0%). *Categorising errors in the margin* is a time-consuming strategy which may require much space to be incorporated so it is not a strategy often used by the teachers who offer PAP feedback. On the other hand, simply marking an error in the margin was not used by the teacher when offering E-feedback, as more effective choices such as using highlighting and categorizing were available to her. In another instance, observing the essays produced by the students in the two groups indicated that *Underline and circle* were the main strategies used to comment on students' paper-based writings in the control group whereas errors in the experimental group had been *highlighted*.

The high proportion of strategy D, *None of the above*, in the control group (21.20%) suggests that teachers offering PAP feedback have more limited strategies to use compared with the electronic mode and it consequently leads to the provision of less feedback to the students. Conversely, the low occurrence of this strategy in the experimental group by 2.65% (M = .66) reveals that with the presence of a variety of strategies (A-F), teachers need not turn to other less common strategies which are not included in this categorisation. These findings in general are supported by other studies (e.g. Huett, 2004; Peretz; 2005; Chandler, 2003; Lightfoot, 2006) that encourage the use of word-processors or similar tools for provision of feedback. Ho and Savignon (2007), for instance, found that students using the Microsoft office annotations, specifically the use of 'track changes', allow easier reviewing process and making additions and deletions to the writings. However, there are some studies that do not support the findings of the current study. For example, according to Chang et al. (2012), although the majority of students preferred e-feedback, handwritten feedback was of higher quality and favoured because students perceived it more personal.

Difference between TCF Strategies in PAP and Electronic Modes

In order to answer the fourth research question, that is, to identify possible significant differences in strategies used by the teacher in order to provide feedback to the students in the PAP and electronic modes, seven independent t-tests (inferential statistics) were run and the mean scores of both groups with regard to every feedback strategy were compared. The results are summarised in Table 4.

Table 4
Results of independent T-test for comparing the strategies of TCF in PAP and electronic modes

Feedback types		Mean Difference	Std. Error Difference	Sig.
A	Underline/circle/ highlight the errors	-1.02	.208	.000
B	Underline/circle/highlight the errors/and provide corrections	.200	.130	.120
C	Underline/circle/ highlight and categorise the errors	-7.42	.236	.000
D	Underline/circle/ highlight, and categorise the errors, and provide corrections	-2.68	.182	.000
E	Give a hint about the errors by putting a mark in the margin	4.26	.139	.000
F	Give a hint about the errors by categorising them in the margin	-3.50	.146	.000
G	None of the above	3.22	.162	.000

As can be seen in Table 4, there was a significant difference in the use of all feedback strategies except strategy B (*Underline/circle/highlight the errors/ and provide corrections*) between the experimental and control group ($p < .01$). Table 3 shows that concerning strategies A, C, D, and F, the mean scores of the experimental group were significantly higher than those of the control group.

The significant difference found with regard to strategies used to mark errors in PAP and electronic mode was expected since in the E-format, a variety of available functions such as Microsoft Office comment box, track changes, as well as arrows, and colour-coding scheme, to name a few, allow teachers to mark errors in a clearer way and to provide more specific feedback in appropriate places within a text (Peretz, 2005). On the other hand, in PAP mode the teachers may limit their feedback to minimal marking of an error such as underlining it with a single pen colour throughout the text. Legibility of errors is another important criterion that should be paid heed when dealing with PAP and E-feedback. *Provide correction* and *give a hint* along with highlighting, circling or underlying are frequent strategies used by the teachers; however, findings of some studies suggest that students read typed comments easier than handwritten comments (Chang et al., 2012). Overall, clear marking of errors through more useful and effective strategies is of high significance; otherwise, the feedback provided to the students would not be helpful.

CONCLUSION

The current study which investigated the nature of teacher corrective feedback in the traditional PAP and modern electronic mode indicated that the medium or mode of feedback had an effect on the type and frequency of feedback to the students suggesting that the distinctive characteristics and capabilities of word-processor and email as a means of delivery make them worthy of integration into writing classrooms as it facilitates provision of more effective feedback to the students. In fact, provision of E-feedback is becoming a must in many settings because as class sizes continue to grow, provision of feedback becomes more challenging for the writing instructors; yet, they are expected to provide rigorous feedback. Moreover, as educational settings increasingly try to incorporate CALL to facilitate teaching and learning, introduction of E-feedback can be a feasible alternative, or a complementary mode of feedback along with the traditional PAP feedback which are still valued by students. Nevertheless, provision of feedback yields a couple of theoretical and practical challenges for teachers, one of which is the matter of choice among the mode of feedback as well as different feedback types and strategies. This is where understanding the advantages and disadvantages of each mode of feedback and its nature of TCF becomes evident; in fact, teachers should view error correction as a problem-solving activity and reflect on the nature of feedback they provide to the students to realise which feedback has the potential for improving writing skills.

Students, specifically those who have always received traditional hand-written TCF, also need to develop capabilities of computer-generated writing and E-feedback.

Despite the significant findings yielded by this study and its contribution to the existing literature, it also had some limitations. It used a limited sample in the context of Iran. Although the findings have implications across a variety of contexts and writing classes in general, conducting this study in other contexts and using a larger population is recommended. Further research can study the features of computer-generated feedback as a medium of producing and delivering feedback on students' written works. In addition, the present study did not investigate the effect of PAP and electronic feedback on students' revision so to provide evidence of the efficacy of each mode of feedback. Thus, future studies should address the degree to which these two feedback forms bring about positive changes in students' writings and their subsequent revisions. However, in order to see whether Electronic or PAP feedback is more effective, it is important to understand the nature of each feedback mode (their form, and purpose and strategies by which they are provided) in the first place; in other words, what is that makes one feedback mode more effective than the other or how medium affects the message to be transferred to the students to result in improving their writing.

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