Effects of Learning Environment Differences (On and Offline vs. Off line) on Intermediate Level Learners' Writing Development*

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In the field of teaching English as a second or foreign language research, researchers have paid attention to learner errors and sought for the effects of written corrective feedback on learners' writing development. In line with this line of inquiry, this study was conducted to see the differential effects of learning environment on the acquisition of writing competency. Seventy-one intermediate level English major students participated in this study, and qualitative and quantitative methods were used to analyze the data. The results of this study indicate that online students outperformed the offline and control groups both in the short and long-term in their writing performance which was indicated by statistical significance. As to the acquisition path, online vs offline students show unique differences favoring the order of sentence type > main verb > usage > word choice > redundancy > word order > logic. What this implies is that in teaching intermediate level students, if a teacher's concern is on global errors, which eventually impede communication, this order provides some insights for them on what should be taught first and next. Logic stands alone in contrast to other global errors indicating that it is the most difficult area of acquisition with its own unique characteristics.

I. INTRODUCTION

In the field of teaching English as a first or second language, researchers have always addressed the essential question of how is a language learned or acquired. To answer for this question, the topics of the investigation have narrowed down to four skills, that is,

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reading, speaking, listening, and writing, and this study specifically focuses on writing by introducing Written Corrective Feedback (WCF) in general, Dynamic Written Corrective Feedback (DWCF), and WCF with Computer Mediated Communication (CMC) with a view to drawing a research need. These lines of research have been scrutinized extensively, but relatively little research show the lack of evidence in supporting or rejecting the efficacy of WCF when online and offline learning contexts were compared. Thus, this study was conducted to test the differential effect of WCF when the two different learning environment, online vs offline, is considered. In addition, this study will also further explore how time lapse differences, short and long term, are affected by the two different learning environment, and whether these two factors, time lapse and the two different learning environment interact with each other or not. Finally, this study will identify acquisition path differences between the two learning environment and provide for a better teaching technique especially in enhancing students' communicative ability in writing.

II. LITERATURE REVIEW

When it comes to the effectiveness of WCF in general, the results of the studies are contradicting, either support (Bitchener, 2008; Bitchener & Knoch 2008; Bitchener & Knoch, 2010a; Bitchener & Knoch, 2010b; Ellis, Sheen, Murakami, & Takashima, 2008; Frear, 2012; Guo, 2015; Rummel, 2014; Sheen, 2007; Sheen, Wright, & Moldawa, 2009; Shintani, Ellis, & Suzuki, 2014; Stefanou, 2014) or reject the efficacy (Kepner, 1991; Semke, 1984; Sheppard, 1992; Truscott, 2010). This question has always been in the heart of the overheated discussion. Studies reporting positive results of WCF over time are quite striking because other WCF studies do show contradicting findings which offer more confusion than the solutions to the writing teachers' perspectives. Writing teachers may want to hear about practical suggestions on what to teach and what not to teach if they adopt WCF as their teaching practice. Compared to the WCF studies reporting unequivocal voices, above cited studies used a firm research design starting from pretest to posttest and a delayed post to test the effect of feedback mode on the acquisition of second language writing competency by comparing the efficacy across time and provided a very solid evidence enough to persuade the writing teachers. For example, Sheen et al. (2009) investigated whether different modes of feedback (direct focused CF, direct unfocused CF, and writing practice alone) produced differential effects on the accurate use of grammar by 80 adult ESL learners. The result of the study indicates that all three experimental groups (Focused CF, Unfocused CF, and Writing Practice Group) gained in grammatical accuracy over time in all the posttests. Based upon the findings of the study they proposed that the Focused CF achieved the highest accuracy gain scores for both

articles and the other four grammatical structures (i.e., copular 'be', regular past tense, irregular past tense, and preposition), followed by, in order, the Writing Practice Group, Unfocused CF and Control Group. They concluded that unfocused CF is of limited pedagogical value whereas focused CF can contribute to grammatical accuracy in L2 writing.

In spite of their solid research design, aforementioned studies can never be free from the criticism. Most of the studies looked at a single linguistic item (article) affected by psycholinguistic paradigm. Truscott (2010) argues that no single form of correction can be expected to help learners acquire knowledge of all linguistic forms/structures because the acquisition of syntax, morphology, and lexis require an understanding not only of form but also of meaning and use in relation to other words and other parts of the language system. Other researchers also expressed concern on learners' different stages of learning (Bitchener, Young, & Cameron, 2005), impossibility of looking at all of the learner errors (Ellis et al., 2008), non-communicative nature of article (Bruton, 2009), and unclearness of the need to look at whole numbers of errors (Ferris, 2010). More importantly, looking at a single linguistic item does not provide any educational implication because article cannot be a discriminator in identifying learner's proficiency (Bitchener & Knoch, 2009; Ferris, 2010; Guenette, 2007; Xu, 2009). As an option to overcome the limitation in light of educational implication, Evans, Hartshorn, McCollum, and Wolfersberger (2010) propose, "...Rather than focusing on whether or not such feedback has value, we maintain that researchers and teachers ought to contextualize research findings and pedagogical practice within the framework of learner, situational, and methodological variables" (p. 231).

Triggered by Evans et al.'s (2010), claim, a series of research has been conducted to test the efficacy of DWCF (Evans, Hartshorn, & Strong-Krause, 2011; Hartshorn & Evans, 2015; Kurzer, 2018; Lee, 2009; Park, 2012). Because of the interactive and continuous nature of the feedback in this instructional strategy, they deliberately use the word *dynamic*, which can refer to "an interactive system or process" marked by "continuous change, activity or progress" (Pickett, 2000, p. 232). Hartshorn and Evans (2015) deplored the fact that although studies of focused WCF may benefit some classrooms and may help advance second language acquisition theory, they may not represent ecologically valid methods where comprehensive feedback may be more appropriate. Secondly, many focused WCF studies only report on learner performance within a narrow list of linguistic features, making it impossible for others to determine any secondary benefits or detriments of the treatment. Finally, many research studies of WCF have been of limited duration, making it difficult to identify longer-term effects of various WCF methods. Followed by their argumentation, Hartshorn and Evans (2015) conducted a study to overcome the previous WCF studies' limitation by examining the effects of dynamic WCF over a 30-week period.

In addition to analyzing linguistic accuracy, they examined the effects of dynamic WCF on rhetorical appropriateness, fluency, complexity, and vocabulary development over a 30 week period. The results of the study indicate that no other differences were found while improvements in linguistic accuracy were observed for the treatment group when compared to a control group.

For the sake of valid comparison among studies cited in this study and thus generalize the findings of the study feasible, the researcher offers analytic schema such as 1) number of subjects in a given study, 2) proficiency, 3) research period, 4) strategic inquiry, 5) existence of control group, 6) acquisition mode, 7) genre, 8) short and long term investigation, and finally 9) the findings of the study.

In looking at the mode of acquisition, some researchers tried to extend the scope of acquisition from accuracy to fluency and complexity (Hartshorn & Evans, 2015; Kurzer, 2018) whereas other researchers exclusively focused on the accuracy (Evans et al. 2011; Lee, 2009; Park, 2012). For example, Evans et al. (2011) build on previous studies of dynamic WCF, which targets all linguistic errors simultaneously. Evans et al. (2011) tested the efficacy of dynamic WCF in the context of ESL students who are enrolled in university undergraduate studies. A comparative study was conducted measuring ESL learners who were taught using dynamic WCF against students who received traditional process writing instruction. Results indicated that students who received traditional process writing instruction experienced some declines in linguistic accuracy while those who received dynamic WCF showed significant improvement in the linguistic accuracy of their L2 writing.

In terms of the existence of control group, all of the aforementioned studies had control group to provide the solid evidence for the effectiveness of dynamic written corrective feedback on the students' writing development. Regarding the genre of writing, opinion paragraphs are predominantly used (Evans et al. 2011; Hartshorn & Evan, 2015; Lee, 2009; Park, 2012), but other researchers failed to report the genre of writing that they selected in their studies. As to the participants of the study in DWCF studies, they are from either university or ESL students. In the domain of participants' proficiency, Kurzer (2018) focused on all level of learners, and Lee (2009) and Hartshorn and Evans (2015) for intermediate-high respectively. For instance, Evans et al. (2011) provided a detailed description on the participants' proficiency by saying, "...each having at least the requisite minimum scores on English screening exams for admission to the university (IBT 66, PBT 550, or IELTS 6.5)" (p.234). On the contrary, Park (2012) vaguely stated that the majority of his participants were English majors. Regarding the investigation period, most of the study were undertaken on a semester basis. By closely looking at the design of the study, one can notice that only Park (2012) adopted pretest, posttest, and a delayed post design whereas all of the others used pre and posttest to test the efficacy of DWCF. Park's study

(2012) is unique in that it does provide strong evidence of relevant effect of DWCF across time for intermediate level of learners. This may lead another begging for the further research exploring the relationships between DWCF and feedback time when beginning writers' proficiency is concerned. All of the researchers used quantitative approach to pursue their inquiry which means that methodological diversity is inevitable if one would like to deepen the understanding toward DWCF effect. This is especially true if one would like to know the reason that some learner gains benefit out of DWCF whereas others get disaster. Finally, as to a core question, whether DWCF does affect second language writers' development, all of the studies report positive results except Hartshorn and Evans (2015). Hartshorn et al. provided a mixed result by representing, "...Test results demonstrated that although rhetorical competence, writing fluency, and writing complexity were largely unaffected by the DWCF pedagogy, significant improvement was observed for writing accuracy" (p. 84).

Another line of researchers has paid on a question of how new tools, namely computer-mediated means of providing and delivering feedback, shape the feedback comments, the processing of the feedback, and the impact on revision and language learning. Much of this research has focused on feedback provided by peers in peer response activities, comparing traditional and electronic ways of providing peer feedback (Liu & Sadler, 2003), or the effect of different communication technologies on peer interaction and subsequent revisions (AbuSeileek & Abualsha'r, 2014; Bower & Satomi, 2011; Chang, 2012; Cho, 2009; Guardado & Shi, 2007; Heift & Rimrott, 2008; Kim, 2007; Liang, 2010; Liu & Law, 2012; Monterio, 2014; Morris, 2005; Park, 2015; Sauro, 2009; Tafazoli, 2014; Wolsey, 2008; Yeh & Lo, 2009).

Compared to DWCF studies whose contexts are offline learning condition, the analytic schema for WCF with online CMC studies were modified to fit for their own learning contexts. These modifications were unavoidable because not all of the studies conducted on CMC interrogated the effect of feedback exclusively. Thus, WCF with online CMC studies were differently analyzed by the analytic schema such as 1) the existence of control group, 2) acquisition mode, 3) short and long term investigation, 4) number of subjects, 5) strategy of inquiry, 6) genre, and 7) the findings of the study. The results of the analysis will be reported in detail.

Among the WCF with online CMC studies, four out of the seventeen studies used control group to test the effects of online feedback mode (AbuSeileek & Abualsha'r, 2014; Park, 2015; Sauro, 2009; Yeh & Lo, 2009). For example, AbuSeileek and Abualsha'r (2014) investigated the effect of using computer-mediated corrective feedback on EFL learners' performance in writing. Sixty-four intermediate-level learners were randomly assigned to either a no-feedback control condition or a corrective feedback, including three treatment conditions. The first is the "track changes" feature of Microsoft Word 2010

which double strikes through deletions and marks insertions in a different color (p.76). The second is recast feedback while the third is metalinguistic feedback. Over the course of eight weeks, each student was required to provide corrective feedback on drafts written by another group member and to discuss it with the group members. Contrary to the studies using control group, other studies show lack of control group although the purpose of the study is to seek for the effectiveness (Bower & Satomi, 2011; Chang, 2012; Heift & Rimrott, 2008; Kim, 2007; Liu & Law, 2012; Liu & Sadler, 2003). For example, Bower and Satomi (2011) conducted a comparative analysis of corrective feedback provided by participants in an eTandem interaction between university students in Japan and Australia who were learning each other's language. Corrective feedback provided to tandem partners during interaction via text-based Synchronous Computer Mediated Communication (SCMC) is compared to corrective feedback provided to tandem partners post-chat utilizing logs of the chat interaction. However, there was no control group validating the effect of eTandem on different types of corrective feedback modes. This flaw in the design of the study is serious because there is no way of knowing whether the results of the study are solely due to eTandem or from other compounding variables that might affect the results of the study (Kibby, 1995). Other studies are descriptive in nature (Cho, 2009; Guardado & Shi, 2007; Liang, 2010; Morris, 2005; Tafazoli, 2014; Wolsey, 2008). As to the studies looking at the effect across time, three studies compared the mean differences from pretest to posttest (AbuSeileek & Abualsha'r, 2014; Park, 2015; Sauro, 2009). None of the WCF with online studies interrogated short and long term effects of writing development, and this calls for future investigation to deepen the understanding of the relevant effect of WCF with online across time.

In terms of reporting the acquisition modes, some researchers focused on the grammatical accuracy of the language use (Heift & Rimrott, 2008; Monterio, 2014; Park, 2015; Sauro, 2009) whereas others report diverse learner errors from accuracy to organization and content (AbuSeileek & Abualsha'r, 2014; Bower & Satomi, 2011; Liu & Sadler, 2003; Morris, 2005; Yeh & Lo, 2009). For example, AbuSeileek and Abualsha'r (2014) included writing aspect as the combination of content, structural organization (text level), structural organization (sentence level), grammatical accuracy, punctuation, lexical appropriateness, and spelling. Regarding the investigation period of the study, most of the studies were conducted on a semester basis except those of AbuSeileek and Abualsha'r (2014), Bower and Satomi (2011), Chang (2012), Heift and Rimrott (2008), Monteiro (2014) ranging from two weeks to 18 weeks. The numbers of participants in the above mentioned studies are various from 12 to 181. In dealing with the method of inquiry, most of the studies predominantly used quantitative approach whereas others used either qualitative (Kim, 2007) or mixed approach (Bower & Satomi, 2011; Chang, 2012; Liu & Saddler, 2003; Tafazoli, 2014). As to the genre of the writing, researchers described

participants' online based activities. For example, Kim (2007) provided excerpts from the study asking, "What do you do in your spare time?" (p. 61). In terms of the effect of WCF with online, among 13 studies surveyed in this study report positive effect of CMC with WCF, but mixed results were also reported (Bower & Satomi, 2011; Guardado & Shi, 2007; Heift & Rimrott, 2008; Liang, 2010; Liu & Law, 2012; Liu & Sadler, 2003; Sauro, 2009). For example, Cho (2009) reported that forms addressed in the Focus on Form Episodes were significantly more likely to be correct than those in the Error Episodes. Focus on Form Episodes-related variables (feedback complexity, metalinguistic explanation, successful uptake, and post-task report) significantly influenced correct scores on the Focus on Form Episodes -based test items. In contrast, in spite of positive results in their studies, Guardado and Shi (2007) also provided a negative report of their students' little confidence in peer commenting in general. Some shied away from the demand to express and clarify meaning, which turned online peer feedback into a one-way communication process, leaving a high percentage of peer comments not addressed. They suggested an intervention of face-to-face class discussion with teacher's guidance to clarify comments into maximize the effect of online peer feedback. Although previous studies offer insights on the effect of DWCF and WCF on the students' writing development exclusively, paucity of studies begs for further investigation comparing and contrasting the relevant effects of online vs. offline learning environment. Based on the critical review from the previous studies, following research questions have been raised:

- 1) From the two different learning environment, online vs offline, which group shows improvement in writing in short and long period of the task?
- 2) Is there an interaction effect between the learning environment differences and task periods?
- 3) Do the learning environment differences affect all error types (global, local, and mechanical), or are there varying effects?

Thus, this study was conducted to; (1) test the efficacy of DWCF on the two different learning environments in short and long term period of the task and (2) compare and contrast the acquisition mode within the two different learning environment.

III. THE STUDY

1. Subjects

The subjects of this study majored in English Language and Literature with the mix of male and female students (eighteen vs. fifty three respectively). Two students from online group did not meet the course requirement, and they were removed from the data analysis.

Thirteen students are from China whereas fifty eight students are from Korea. The writing class was aimed at the intermediate level learners.

2. Procedures, Instrument, and Treatment

This study was carried out being motivated by Evans et al.'s (2010) blended design (p. 454), and the following figure represents the difference between Second Language Acquisitionists' and writing practitioners' perspectives and the integration of the two perspectives which is called as a blended design.

FIGURE 1
Study Design Incorporating Revision (Adopted From Evans et al.'s (2010) Study)

On the second week of the class, students from three groups took pretest. Following is the topic for pretest, posttest, and delayed posttest.

- 1) Pretest: Where would you prefer to live, city or countryside?
- 2) Posttest: In your opinion, why are many people eager to learn English?
- 3) Delayed posttest: If you were an English composition teacher, what are at least three factors that you would consider seriously?

Suggested genre of the writing was opinion paragraphs, and the topics were chosen from English Testing Service's homepage (<http://www.ets.org>). All of the writing tests were administered in a computer lab with 30 minutes' time limit. One week later, online and

offline students received the teacher feedback whereas control group did not. Exclusively for the online group students, they were requested to send their revised versions of writing by the end of the week every time they receive the feedback. They were also requested to submit their progressive reports by the end of the semester. Appendix A demonstrates a sample of learner's progressive report. The other distinctive feature that online group students were exposed to was doing quiz activities provided in a designated café (<http://cafe.daum.net/etwas777>). After the analysis from the pretest, the researcher selected the five most occurring errors from the local learners, that is, sentence types, agreement, verbs, parallelism, and articles and nouns. These major errors were posted at the café, and students are obliged to read the exemplary errors and make some changes according to their opinion. In addition, their voluntary participation in the café was reflected as bonus points. Starting from the third week to the eighth week, online students took five quizzes, and the results were discussed in detail. On the contrary, offline students did not take quizzes, and they are not required to hand in the progressive report. However, offline students were also provided with direct WCF every time they finished the tasks. For the case of control group, students have only to submit their writings with the same given topics that online and offline students were given in their writing tasks.

3. Target Structures

Unlike SLA researchers' orientation where they focused on a single linguistic error, the researcher analyzed the results of pretest to identify the most frequently occurring errors and decide what to teach throughout the semester. From the analysis, it was indicated that the subjects of this study made 40 errors, and <Table 1> summarizes student produced errors in detail.

TABLE 1
Forty Errors Produced From the Subject of This Study

Error types	NOE	Error types	NOE
1. Sentence type	61	21. Conjunction	7
2. Mechanics	55	22. Pronoun	7
3. Meaning	43	23. Adverb	6
4. Agreement	42	24. Voice	6
5. Main Verb	36	25. Word Order	5
		26. Balance among introduction, body, and conclusion	5
6. Parallelism	32	27. Logic	4
7. Article	28	28. Part of Speech	4
8. Paragraph indentation	20	29. Topic sentence	4
9. Connectives	19	30. Coherence or cubing	3
10. Thesis statement	17	31. Modals	3
11. Title	17	32. Style	3
12. Word choice	16		

13. Preposition	16	33. Demonstrative	2
14. Usage	13	34. Modifiers	2
15. Comparison	13	35. Auxiliary verb	1
16. Noun	10	36. Case	1
17. Verbals	10	37. Mood	1
18. Redundancy	9	38. Negation	1
19. Object	8	39. Possessive	1
20. Adjective	7	40. Subjunctive mood	1

Note. NOE stands for number of errors

Among these 40 errors, 17 most frequently appearing errors became the primary focus of the feedback. Following illustrates examples of these errors.

- 1) Sentence type: * Time goes soon, the sun is gone. (A conjunction is needed.)
- 2) Mechanics: * i think his plan is successful.
- 3) Meaning: *They look for going car.
- 4) Agreement: * There are fork, knife, bottle and fruit, etc on the table.
- 5) Main Verb: * The man swimming in the sea.
- 6) Parallelism: * Eggs, salt, sources are on the table. (A conjunction is needed to parallel the structure.)
- 7) Article: * They ride bicycle. (Article a is needed in front of bicycle.)
- 8) Paragraph indentation: Errors which show no paragraph indentation in the beginning of a paragraph.
- 9) Connectives: * Example, when friends need help from me, I always help them with full of kindnesses.
- 10) Thesis statement: An error which needs a topic sentence in a paragraph.
- 11) Title: An error which needs a specific title in a paragraph.
- 12) Word choice: * Friend went to go home and they had a time to remind all days with drinking beer.
- 13) Preposition: * First of all, I want to live a comfortable village with familiar neighbors. (Preposition in is needed after verb be.)
- 14) Usage: * And still, we attend same college. (Article the is needed in front of same.)
- 15) Comparison: * They wear comfortable clothes and shoes than city. (More is needed in front of comfortable.)
- 16) Noun: * I liked to take pictures for peoples, and I was happy when they liked my pictures.
- 17) Verbal: * We plan to a house party at my home. (Root is needed after to.)

Then, these errors were categorized into three areas such as global, local, and mechanics (Kurzer, 2018). The difference between the global and local error is whether the errors are

critical in carrying out meanings in the written text. <Table 2> summarizes three different types of errors categorized in this study.

TABLE 2
Three Different Types of Errors Categorized in This Study

Global	Types of Errors	
	Local	Mechanics
Meaning	Sentence type	
Agreement	Parallelism	
Main Verb	Article	
Word choice	Paragraph indentation	
Usage	Connectives	
	Thesis statement	
	Title	
	Preposition	
	Comparison	
	Noun	
	Verbal	

Both online and offline students were notified that 17 errors would be the focus of the feedback throughout the semester.

4. Analysis

To validate the findings of study, method triangulation, that is, quantitative and qualitative approach was attempted (Maxwell, 2013). To that end, NVivo 11 was used to identify the frequency of the errors in general and compare and contrast error patterns from online and offline students and draw a diagram which shows acquisition path among global errors. SPSS version 18 was used to test the research hypotheses and see the interaction between different learning environment and task periods.

5. Assessment

Unlike previous studies focusing on accuracy, in this study, from the students' writing, accuracy and fluency were combined. By extending the error ranges from linguistic to organization and content, students' errors were measured by all the errors appearing in their writings (Park, 2007). In addition, fluency was measured by writing rate (syllables per minute) (Ellis & Barkhuizen, 2005).

IV. RESULTS

The findings of this study will be reported in turn according to the research questions.

Research question 1. From two different learning environment, which group shows improvement in writing in both short and long term?

<Table 3> presents the group homogeneity test to investigate mean differences among three groups of learners.

TABLE 3
The Results of Group Homogeneous Test

Levene Statistics	<i>df</i> 1	<i>df</i> 2	<i>Sig.</i>
.807	2	71	.144

The results of group homogeneous test indicate that three groups of this study are the same in terms of writing ability ($p = .144$). So to speak, three groups in this study show similar abilities at least in the initial stage of the investigation.

<Table 4> summarizes descriptive statistics for mean scores of Online, Offline, and control group taken over the three testing periods: pretest, posttest 1 (immediate posttest), and posttest 2 (delayed posttest).

TABLE 4
Group Means and Standard Deviations for Writing Scores

Feedback Types	<i>M</i> and <i>SD</i>	Pretest	Posttest 1	Posttest 2
Online (<i>N</i> = 23)	<i>M</i>	67	69	84
	<i>SD</i>	9.3	7.6	20
Offline (<i>N</i> = 24)	<i>M</i>	71	69	77
	<i>SD</i>	18	7.6	12
Control (<i>N</i> = 22)	<i>M</i>	65	67	67
	<i>SD</i>	7	7.3	7.4
Total	<i>M</i>	69	68	76
	<i>SD</i>	13	7.5	16

<Figure 2> provides a visual representation of the total mean scores for the three testing periods of each group. As shown here, the writing scores for all three groups reveal an increase from pretest to posttest 2. However, the graph shows that the mean scores of the three groups increase at different rates from each other. For example, the difference between the offline and control group appears to be considerable. Although the two groups started out with similar pretest scores, the control group in the posttest and delayed posttest

showed no improvement, whereas the online group showed a remarkable increase in writing scores.

FIGURE 2
Group Means of the Three Different Groups

Research question 2. Is there an interaction effect between the learning environment differences and task periods?

To see if there was a differential effect for any of the feedback options on the targeted error categories when they were considered as a single group rather than as three separate error categories, a two-way repeated-measure ANOVA was performed with writing scores as the dependent variable, and with Time (pretest, posttest 1, posttest 2) and learning environment differences (Online, Offline, and control) as independent variables. <Table 4> shows the results of this analysis. As can be seen in <Table 4>, the analysis of repeated-measure ANOVA for three groups indicates that there were significant differences across learning environment differences ($F = 21.166, p = .000$), and so was Task Time ($F = 21.906, p = .000$). Also, there was a significant interaction between learning environment differences and Task Time indicating that students exposed to the different learning environment show different levels of writing development over time ($F = 11.232, p = .000$). Therefore, one can say that average levels of writing performance overall were significantly different, and patterns of improvement or decline were also significantly different for the different feedback types according to which of the three times in which the writing was produced.

TABLE 5**Interaction Effect Between Learning Environment Differences and Task Time**

Source	Sum of square for type III	<i>df</i>	Mean square	<i>F</i>	<i>Sig.</i>
Adjusted Model	7050.360a	8	881.295	6.115	.000
Intercept	1087309.904	1	1087309.904	7544.226	.000
Learning Environment Differences	2830.269	2	1415.134	9.819	.000
Task time	1998.702	2	999.351	6.934	.001
Learning Environment Differences *	1821.113	4	455.278	3.159	.015
Task time					
Error	30266.205	198	41.623		
Total	1140773.541	219			
	37316.565	218			

a. R square=.189 (Adjusted R square=.158)

* $p < .05$

Research question 3. Do the learning environment differences affect all error types (global, local, and mechanical), or are there varying effects?

To answer for the research question 3, the subjects of this study was divided into two groups, Online vs Offline, and their error codings for the delayed post were counted by using NVivo 11's Coding Matrix Search. <Table 6> reports the results of Coding Matrix Search (learning environment differences by error types).

TABLE 6**The Results of Coding Matrix Search (Learning Environment Differences By Error Types)**

		Error types			
		Local	Global	Mechanics	Total
Learning environment differences	Online	28	63	19	110
	Offline	65	71	13	149
Total		93	134	32	259

According to <Table 5>, types of learning environment, either online or offline affect learner produced 38 error types with different manners. Online students made fewer errors in local and global errors when they were compared to students from offline (28 vs 65 and 63 vs 71 respectively). However, for the case of mechanic errors, online students show more errors than the errors produced from offline students (19 vs 13). Thus, based upon the finding, one can conclude that learning environment differences play a key role in

minimizing EFL writers' errors in writing both in global and local area although this is not the case for the mechanic errors.

Cluster analysis by using NVivo 11 was conducted to identify the relationships among eight global errors identified in this study, and the following table summarizes the results of cluster analysis.

TABLE 7
The Results of Cluster Analysis Among Global Errors

Node A	Node B	Jaccard's coefficient
Sentence types	meaning	0.7
Meaning	Main verb	0.5
Sentence type	Main Verb	0.45
Usage	Main Verb	0.29
Word choice	Meaning	0.27
Usage	Meaning	0.27
Usage	Sentence type	0.27
Word choice	Sentence type	0.26
Word choice	Main verb	0.25
Word choice	Usage	0.24
Usage	Redundancy	0.22
Word choice	Redundancy	0.21
Sentence type	Redundancy	0.21
Redundancy	Main verb	0.21
Redundancy	Meaning	0.19
Word order	Redundancy	0.14
Meaning	Logic	0.14
Sentence type	Logic	0.13
Word order	Word choice	0.12
Word order	Main verb	0.11
Word order	Meaning	0.097
Word order	Usage	0.093
Word order	Sentence type	0.092
Main verb	Logic	0.091
Word choice	Logic	0.0089
Usage	Logic	0.0087
Redundancy	Logic	0
Word order	Logic	0

The results of cluster analysis indicate that sentence type and meaning (0.7), meaning and main verb (0.5), and sentence type and main verb show relative similarities whereas redundancy and logic (0) and usage and logic (0) show no relationship at all.

<Figure 3> reports a graphic representation of the results of global error nodes clustered by coding similarity.

FIGURE 3**Global Errors Clustered by Coding Similarity**

According to <Figure 3>, in light of producing global errors, two clusters stand independently. Obviously, logical errors stand alone as an independent cluster whereas the other cluster has subcategories that are interrelated with each other. In cluster two, word order is independently existed while others are correlated with each other. What this diagram implies is that there exists a teaching order which is finely tuned for a specific group of students, for this case, an intermediate level students who show a mean score of 69 in the beginning stage of instruction with given assessing criteria of this study integrating accuracy and fluency scores at the same time. To them, an ideal teaching order can be, starting from the integration of meaning and sentence type > main verb > usage > word choice > redundancy > word order > and finally logic.

V. DISCUSSION AND CONCLUSION

This study was conducted to test the efficacy of DWCF on the two different learning environments in short and long term period of the tasks and compare and contrast the acquisition mode within the two different learning environment. In terms of two different learning environment, online group of this study outperformed in the post and delayed posttest and thus provide the evidence for the beneficial effects of DWCF. This result is in line with the previous studies exploring the positive effect of DWCF on the students' writing development (Evans et al., 2011; Hartshorn & Evans, 2015; Kurzer, 2018; Lee, 2009; Park, 2012). In addition, this result is also congruent with the studies conducted on the online learning environment (AbuSeileek & Abualsha'r, 2014; Park, 2015; Sauro, 2009; Yeh & Lo, 2009) although the feedback mode was not necessarily DWCF. However, this result has limited applicability in considering the current study's primary consideration

toward DWCF which even excludes this study from that of the previous DWCF studies, that is, combining accuracy and fluency in assessing students' writings. As far as the researcher knows, few studies looked at the combined effect of accuracy and fluency on the students' writing development, and thus call for future studies to verify the finding of this study is definitely needed.

In terms of exploring different language acquisition patterns, online group outperformed off-line or control group although no statistical testing was administered, and thus the interpretation can be quite suggestive rather than declarative. In spite of its limitations, it is still quite worthwhile to look at the sharp contrast between online and off-line group in showing the numerical differences favoring for online group in all three areas of areas. Online group shows sharp contrasts comparing with the off-line, conventional ways of teaching grammar and writing feedback. This result needs to be investigated further by implementing more numerical oriented, testing preferred perspective, but at least, in this stage, it can offer educational implication for a specific group of writing learners. When one teaches the intermediate level of learners, of course, one cannot teach all of the components of writing, but special attention is needed to what to teach first and last.

According to the result of this study, if a writing teacher is quite interested in helping learners' communicative aspects of writing, the hierarchy of teaching components should be decided according to the following order.

Sentence type > Main verb > Usage > Word choice > Redundancy > Word order > and finally Logic.

In this study, learner produced errors from the pretest served as a trigger in enhancing learner awareness and final writing product. Appendix A and B illustrates examples of two quizzes as to sentence type and main verb. Especially, the sentence type quiz served as a strong indicator of learners' posttest writing ability as well as the beginning stage of learner ability. Other errors relevant to learners' communicative ability with having untreatable traits, word choice and usage might have some instructional choices. For the case of word choice, a writing instructor can possibly choose a book exclusively handling this issue as a part of supplementary text in a course, for example, *Word for Word* written by Clark and Pointon (2003). This book explicates what nuance a specific word carries with relevant reference to other synonymous words, visit, stay, call on, and drop in. Throughout the semester, the writing teacher can ask students to prepare word choice quizzes on a weekly basis. This can also applicable to the case of helping usage errors where a systematic guidance and test can possibly ameliorating students' habitual mistakes in usage. It is no wonder to say that this suggestion on these two errors do need empirical evidence to support the claim, and it also needs further scrutiny.

The result of this study may not be applicable to all levels of students because the primary focus of this study is geared toward the intermediate level of learners whose ability belongs to the mean score of 69 which was the integration of accuracy and fluency score obtained from the pretest. Therefore, the questions of whether DWCF can be an innovative instructional strategy and the description of learners' acquisition patterns are open to other levels of learners, in other words, beginning and advanced group of learners. However, one has to admit the fact that the boundaries among learner abilities are blurred for the case of DWCF, and this study may offer one alternative way of assessment if this study can be easily compared from the results of other studies on an equal basis.

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APPENDIX A

Quiz 1. Sentence Types

Direction: At the end of the following construction that begins with a capital letter and ends with a period, write F if the construction is a sentence fragment and S if it is a sentence.

1. The scandals have not changed my political views. Though I do not like the men now in office. For they are crooks.
2. With the moon high and the lake shimmering silver. Our vacation seeming the best we have ever had. Even though it is costing us a fortune.
3. I like classes that have a little humor in them. Especially English classes. Since the subject matter is so boring.
4. I find the dictionary hard to use. For I usually I don't know how to find the word I want to spell correctly. Therefore I use only simple words in my writing.
5. To be as free as the wind and birds. To feel kinship with all nature. That makes me

happy.

6. I squealed my tires as I made the U-turn. And there stood a policeman. Looking pleased at his opportunity to write a ticket.
7. Central Park is full of friendly people. Such as muggers, bicycle thieves, and pick-pockets. Who easily evade the police.
8. The older generation just doesn't understand us. Because we have developed our own life style. Which is different from theirs.
9. High on the cliffs above the Snake River, the eagles with their sharp eyes surveying the landscape. The field mice nervously ate and kept watch.
10. College offers much more than academic education. Such as lively social life. And going to college beats working.
11. Football, with its enormous spectator drawing power, which is unequalled in the sports world. Except for soccer,
12. In much wisdom is much grief. And he who increases knowledge increases sorrow.
13. The taste of garden-fresh spring vegetable is one of the world's delights. with no other comparable to it. Unless it's that of bourbon.
14. The mine entrance looking gloomy, with water dripping from its ceiling. Not to mention the scary blackness as we looked into it.
15. The police dog stood directly in our path. his teeth bared and low growls coming from his throat.

Direction: **Identify each word group, using the following letters:**

F = Fragment

S = Sentence

RS = Run-on Sentence

16. Inviting me to serve as head of the committee.	16 _____
17. The voters elected Corey, a man who had no experience in politics.	17 _____
18. Accidents don't just happen, they are usually caused by negligence.	18 _____
19. Which is the greatest contributor to air pollution.	19 _____
20. Mr. Perez listens to everyone's opinion, then he makes up his own mind.	20 _____

Direction: Indicate the subject (or subjects) and the verb (or verbs) in each sentence by writing, under the proper headings, the letters of the words you select.
Subject(s) and Verb(s)

21. Where does a tornado get its tremendous power? 21 _____
A B C D E F G H
22. My mom's knowledge of motors has saved us much expense. 22 _____
A B C D E F G H I J
23. These figures the paper should have checked before publication. 23 _____
A B C D E F G H I
24. We went there for a few days but stayed an entire month. 24 _____
A B C D E F G H I J K L
25. Only the manager or his assistant can open the safe. 25 _____
A B C D E F G H I J
26. The spots on Jimmie's clothes told the story of his day. 26 _____
A B C D E F G H I J K
- 27 With a little more study, Roy could have passed his test. 27 _____
A B C D E F G H I J K

Direction: Does the sentence require a comma before the italicized conjunction?
Write Yes or No in the space at the right.

28. A wild duck rose from the pond *and* skimmed the treetops. 28 _____
29. My dad urged me not to buy the car *but* I was too excited
to take his advice. 29 _____
30. There are no nearby playgrounds *and* the children are forced
to play in the street. 30 _____
31. One can take the advice of experienced investors *or* learn
the hard way by himself. 31 _____
32. Safety belts are required in all cars *but* does everybody wear
them? 32 _____
33. The chipmunk paid no attention to me *but* continued to hunt
for its breakfast. 33 _____
34. I wrote down the strange word *and* later looked it up in the
dictionary. 34 _____
35. The team was at the bottom of the league *and* the attendance
at games dropped steadily. 35 _____
36. Shutters were once a necessity *but* are now used only for
decoration. 36 _____
37. A check must be properly endorsed or a bank will not cash it. 37 _____

APPENDIX B

Quiz 2. Main Verbs

Direction: Underline the mistakes in the given sentences and rewrite **ONLY** the mistakes.

1. Did you say me that you like a movie?
2. She could scarcely recognizes nobody.
3. Do you liked to listen to music?
4. Did you decide to apply our university because of your brother by any chance?
5. I waited your e-mail.
6. Did you attend to MT?
7. I envy for you.
8. I often go to there.
9. I went a restaurant to eat dinner.
10. I waiting for your response.
11. It's a mid-exam period, so you will very busy.
12. I really glad to see your mail.
13. If you given a chance, go to 'Narita'.
14. I envy you in that you able to get angry about it.
15. He never smoking and drinking very much.
16. We intimate terms with each other.
17. She is an even tempered person and a straight forward character.
18. I want you write a guest book.
19. Are you major in English?
20. I like eat something.
21. Anyway I was happy accept your offer.
22. I was really feel chilly and scared.
23. Do you like play by ball?
24. Finally, we begun to drink.

Applicable level: university

Keywords: written corrective feedback, on and offline effect, short and long term writing
development, revision

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