

Application of Computer Software *Grammarly* into Written Corrective Feedback on Low-Level EFL Learners' Writings

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Abstract: The present study aimed to investigate effects of direct and indirect written corrective feedback (WCF) on the development of Korean EFL writing skills. Feedback was provided using the computer software *Grammarly*. Twenty-seven students of the English Department of Adult Life-long Education at a university in Seoul participated in this study. The researcher employed a three-stage design: (1) individual writing of a draft in class, (2) two types of feedback (direct WCF vs. indirect WCF, reformulation), and (3) individual rewriting in class. Participants' writing scores significantly improved after receiving feedback overall. In addition, errors in forms and clarity significantly reduced after the feedback, but not errors in word choices. Regarding feedback types, learning gains were more significant after direct WCF than reformulation, although errors in forms after direct WCF and word choice errors after reformulation significantly reduced among three types of errors. Additionally, most errors occurred in forms. The ratio of uptake was relatively low. The direct WCF group demonstrated a higher uptake in errors of forms and clarity, while word choice errors were more effectively addressed by reformulation. Theoretical and pedagogical implications of these findings are discussed.

Keywords: *Grammarly*; Written Corrective Feedback; Direct WCF; Reformulation; Uptake; L2 Writing

1. Introduction

According to [1]'s meta-analytic study, written corrective feedback (henceforth, WCF) was very effective in developing L2 writing skills. While L2 learners may encounter difficulties with language errors in writings, L2 teachers could deal with the challenges to provide feedback for students as well. However, providing feedback on a variety of aspects of language forms such as low-level forms, mechanics and complex issues related to content and organization can be time-consuming for teachers [2, 3]. The integration of the computer software, *Grammarly*, into teaching and research could be a promising solution.

Grammarly was found to be related to the students' improvement in composing descriptive writing [4, 5] also showed a significant reduction in their error than the students whose work is evaluated manually by indirect corrective feedback through teachers. Two common types of WCF were direct WCF and indirect WCF, reformulation, in the L2 literature [6]. Direct WCF can help L2 learners to test the hypotheses of their interlanguage by providing them with the correct form of an error [7], while indirect WCF, reformulation, can lead them to have more opportunities to be involved in an active learning process by self-correcting their own writing [6].

However, there is a limited number of studies directly comparing between direct and indirect WCF, especially using the software, *Grammarly* [2]. For example, few studies have directly addressed this comparison between direct and indirect WCF [2][8, 9], indicating a scarcity of research in this area. Furthermore, few studies have explored the application of the software, *Grammarly*, into the feedback study in L2 literature [2]. Hence, this study aims to investigate the effects of two types of feedback, direct WCF and indirect WCF, reformulation, on the development of Korean EFL writing skills with the help of *Grammarly*.

2. Literature Review

In the L2 writing literature, two most common types of written corrective feedback are direct WCF and indirect WCF, reformulation [6, 7] suggested that direct WCF enables learners to pay attention to their interlanguage problems by providing the corrected forms next to their errors. On the other hand, indirect WCF, reformulation, facilitates deep processing of the feedback by correcting writing errors maintaining the original meaning of the initial drafts [8], [10].

[1] performed a meta-analytic research to investigate the efficacy of WCF in second language (L2) writing instruction. The study synthesizes and reviews 35 primary studies of current empirical research in this field. They found that WCF had positive effects on L2 written grammatical accuracy. In addition, direct WCF demonstrated a larger effect size than indirect WCF, though differences were not statistically significant. The study also found learners' proficiency to be the strongest moderator.

[9] conducted the three-stage (composition, comparison, and noticing/revision) study to examine the effects of direct WCF and indirect WCF, reformulation, on noticing and uptake of secondary school EFL learners. They found that direct WCF had more positive effects on noticing and uptake than reformulation. [6] also compared direct WCF and reformulation with adult ESL learners taking an academic writing course. During the comparison stage between their drafts and feedback, the participants completed think-alouds. The study revealed that the participants in the reformulation condition processed the errors in the sentence and paragraph-levels more deeply but ignored surface-level errors, while the reverse happened to those in the direct WCF.

Recently, [2] examined the efficacy of direct WCF and reformulations in developing the writing skills of second language learners in Korean EFL college contexts. The findings showed that the participants reported higher feedback uptake in reformulations. The results also suggested that proficiency levels could influence the effects of the feedback. Low-level students showed a higher uptake from WCF while intermediate-level students demonstrated a greater percentage of uptake from reformulations. Additionally, the students independently tried revisions in areas unrelated to the feedback, but these self-revisions turned out to be mostly unsuccessful.

Nowadays, many researchers have investigated the use of the computer software, *Grammarly*, in writing feedback [11]. *Grammarly* offers three versions of users: (1) free version, (2) premium version, and (3) business version. Some basic features, including punctuation, word spelling, and grammar, are provided for the free version. While the premium version has covered more exclusive features, such as correctness, clarity, engagement, delivery, deactivated suggestions, language style, and plagiarism detection.

[4] studied the effectiveness of *Grammarly* in development of descriptive writing skills. They found that the use of *Grammarly* in teaching descriptive could have a significant influence on the students writing enhancement. [5] reported that the students who intensively use *Grammarly* in their works had a significant reduction in their errors than the students whose work is evaluated manually by indirect corrective feedback through teachers.

3. Methodology

3.1 Participants and Research Questions

Twenty-seven students (8 males and 19 females) taking a basic English writing course at English Department of Adult Life-long Education at a university, Seoul, participated in this study fall semester in 2023. They were all asked to take online Cambridge English test, which consists of 6 levels from A1—A2 (beginner) through B1—B2 (intermediate) to C1—C2 (advanced). Their scores ranged from 5 to 19, which means that their proficiency levels were beginner-high (A2 in most cases) or intermediate-low (B1). The participants graduated from high school and worked for more than three years and applied to this school. The study seeks to answer whether there are any differences in the writing scores and types of errors (uptake) after two types of feedback, direct WCF and reformulations.

3.2 Research Design and Data Analysis

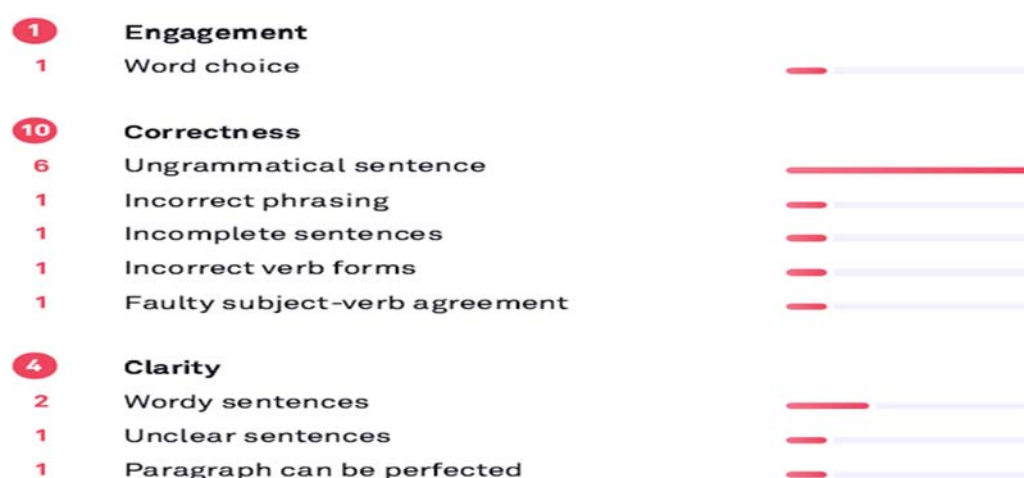
For the study, the researcher took the three-stage design: (1) Individual writing a draft in class; (2) Feedback (Direct WCF vs. reformulation); and (3) Individual rewriting in class [8, 9]. First of all, all participants were individually asked to write a descriptive paragraph on the topic provided by the researcher, On the Way to School, and to write it in class in Stage 1, as you can see in Table 1.

Table 1. Research Design

	Group 1	Group 2
Stage 1	Individual Writing 1st Drafts in class	
Stage 2	Direct WCF	Reformulation
	Individual Comparison between Drafts and Feedback	
Stage 3	Submission of Revision	

After class, the researcher collected the drafts and corrected their errors in a copied version of students' original drafts, using the premium version of *Grammarly* [12, 11]. The errors in the drafts were classified into correctness (form), clarity, and engagement (word choice), as shown in Figure 1 below.

Writing Issues

**Figure 1.** Types of Errors

Writing scores and types of errors in both drafts and revisions were calculated by *Grammarly*. For the data analyses of the research questions, the researcher performed a one-way analysis of covariance (ANCOVA) and a paired-sample t-test. ANCOVA was conducted to compare writing scores and types of errors between drafts and revisions, which was designed to control the writing scores and errors of the drafts as covariance. Then, a paired-sample t-test was performed to see learning gains and uptake after feedback.

4. Findings

4.1 Effects of Writing Feedback

Table 2 presented the data on the writing scores of the participants' drafts and their revisions provided by the program, *Grammarly*. The writing scores of the drafts and revision in total were 71.85 and 81.50, respectively. Those of WCF and Reformulation groups were like these: 72.33 and 83.13, and 71.25 and 79.67, respectively.

Table 2. Descriptive Statistics of Feedback Types

	Scores	N	Mean	SD
Total	Drafts	27	71.85	9.60
	Revision	27	81.59	12.83
WCF	Drafts	15	72.33	10.87
	Revision	15	83.13	13.58
Reformulation	Drafts	12	71.25	2.36
	Revision	12	79.67	3.50

ANCOVA statistics were conducted to see if there was any difference between the direct WTC and reformulation groups, as shown in Table 3. There was no statistically significant difference for the treatment ($F=.487$, $p=.492$). In addition, the independent variable explained only .020% of the variance in the dependent variable (the treatment) ($\eta^2=.020$).

Table 3. ANCOVA Statistics

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Eta Squared
Corrected Model	2393.814 ¹	2	1196.907	15.209	.001	.559
Intercept	52.736	1	52.736	.670	.421	.027
Drafts	2313.696	1	2313.696	29.40	.001	.551
Treatment	38.296	1	38.296	.487	.492	.020

¹R Square=.559 (Corrected R Square=.522)

To assess the effects of the feedback on the students' writings, paired-sample t-statistics were conducted. The writing scores of the drafts and revisions were 71.85 and 81.59, respectively, which indicates the significant increase after the feedback in total, as shown in Table 4 below. In addition, each of the errors, correction, clarity, and engagement, reduced after the feedback, where there were significant differences in correction ($p=.001^{**}$) and clarity ($p=.025<.05^{*}$) errors.

Table 4. Paired-sample T-Statistics of Feedback

Paired Samples	Mean	N	SD	t	p
Drafts — Revision (Scores)	71.85	27	9.60	-5.879	.001
	81.59	27	12.83		
Correction Errors	7.89	27	2.58	4.498	.001
	5.78	27	3.65		
Clarity Errors	1.96	27	1.61	2.380	.025
	1.48	27	1.31		
Engagement Errors	.63	27	.74	1.991	.057
	.44	27	.64		

$p<.05^{*}$, $p<.01^{**}$, $p<.001^{***}$

Tables 5, 6 showed the effects of two types of feedback on students' revisions: direct WCF and reformulation. First of all, the difference between the drafts and revisions was statistically significant ($p<.001^{**}$) after direct WCF, as shown in Table 5. Only one type of the error, correction, among three types of the errors was statistically significant ($p=.001^{**}$).

Table 5. Paired-sample T-Statistics of Feedback

Paired Samples	Mean	N	SD	t	p
Drafts — Revision (Scores)	72.33	15	10.87	-5.239	.001
	83.13	15	13.58		
Correction Errors	7.93	15	2.99	5.405	.001
	5.47	15	3.70		
Clarity Errors	1.60	15	1.92	1.871	.082
	1.00	15	1.25		
Engagement Errors	.47	15	.64	.000	1.00
	.47	15	.64		

$p<.05^{*}$, $p<.01^{**}$, $p<.001^{***}$

In contrast, the difference between the writing scores of the drafts and revisions was moderately significant ($p=.011<.05^{*}$) in Table 6, compared with that of direct WCF. Furthermore, there were no significant differences

in any types of the errors after reformulation except the engagement errors (word choice). The results indicate that direct WCF made more positive effects on the students' writings than reformulation.

Table 6. Paired-sample T-Statistics of Feedback of Reformulation

Paired Samples	Mean	N	SD	t	p
Drafts — Revision (Scores)	71.25	12	8.18	-3.63	.011
	79.67	12	12.14		
Correction Errors	7.83	12	2.08	1.85	.091
	6.17	12	3.71		
Clarity Errors	2.42	12	.99	1.48	.166
	2.08	12	1.67		
Engagement Errors	.83	12	.83	2.80	.017
	.42	12	.67		

p<.05*, p<.01**, p<.001***

4.2 Effects of Feedback Types and Uptake

Tables 7-9 showed how much uptake occurred from feedback. Firstly, Table 7 revealed that the total T-units were 13.11 (Mean), and the uptake of each error was distributed as follows: 26.74% in correction, 24.48% in clarity, and 30.16% in engagement. Secondly, T-units in the drafts of direct WCF group was 13.73 (M), as shown in Table 8. Each of the uptake in three error types was 31.02%, 37.5%, and 0%, respectively. Finally, the reformulation feedback group in Table 9 showed that their T-units were 12.33 (M), and their uptake in each error was 21.20%, 14.05%, and 49.39%. In summary, most of the errors occurred in correction or forms and the ratio of the uptake was relatively low. However, the direct WCF group demonstrated a higher uptake in the errors of correction and clarity, while the reverse can be applied to the errors of the engagement. However, we should be careful to interpret the uptake of the engagement errors since the numbers were too low to compare two feedback groups.

Table 7. Descriptive Statistics of Feedback & Uptake (%)

	Correction	Clarity	Engagement
T Units		13.11	
Draft Errors (M)	7.89	1.96	.63
Revision Errors (M)	5.78	1.48	.44
Uptake (%)	26.74%	24.48%	30.16%

Table 8. Descriptive Statistics of WCF & Uptake (%)

	Correction	Clarity	Engagement
T Units		13.73	
Draft Errors (M)	7.93	1.60	.47
Revision Errors (M)	5.47	1.00	.47
Uptake (%)	31.02%	37.5%	0%

Table 9. Descriptive Statistics of Reformulation & Uptake (%)

	Correction	Clarity	Engagement
T Units		12.33	
Draft Errors (M)	7.83	2.42	.83
Revision Errors (M)	6.17	2.08	.42
Uptake (%)	21.20%	14.05%	49.39%

5. Discussion and Conclusion

This study showed that WCF through the computer software, *Grammarly*, played a positive role in the development of EFL learners' writing skills. The learning gains between drafts and revisions after feedback were significant overall. Furthermore, the errors in correction and clarity, except in engagement, significantly reduced after the feedback.

The results regarding the effects of feedback types revealed that direct WCF had a more positive impact on the students' writing than reformulation. However, feedback types could influence their effects on different types of errors. For example, only correction errors among the three types of errors statistically reduced after direct WCF, while only engagement errors (word choices) statistically reduced after indirect WCF.

More specifically, most of the errors occurred in correction (forms), and the ratio of uptake was relatively low in general. The direct WCF group demonstrated a higher uptake in the errors of correction and clarity, while there was a higher uptake in the engagement errors in the reformulation group. This study supports the previous research findings [4], [12]. [4] showed that the use of *Grammarly* in teaching descriptive writing could significantly enhance students' writing. [12] provided evidence of the positive effects of the automated written feedback tool, *Grammarly*, on reducing writing errors of L2 learners, particularly with frequent correction (forms) errors such as 'determiner use' and 'incorrect verb forms' [13, 14].

However, the problem with the use of *Grammarly* was that the ratio of uptake was relatively low in this study. Therefore, we need to offer oral or written corrective feedback through teachers as well as the computer software rather than exclusively depending on *Grammarly*.

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