

## Computer-mediated Corrective Feedback on Students' Second Language Essay Writing Skills

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### ABSTRACT

The integration of technology in language learning has become a valuable matter to provide language learning efficiency and language learning experience. Recently, Computer-mediated Corrective Feedback (CMCF) has been considered for its effectiveness as a technology-integrated pedagogical method to provide feedback on various writing aspects and develop writing performance thus improving writing skills. Likewise, this study investigated the effect of Computer-mediated Corrective Feedback (CMCF) on first-year undergraduate students' second-language essay writing skills at a private university in Banten. Accordingly, this study employed a quantitative method that involved 30 students who were assigned into two groups. Specifically, 15 students were assigned into an experimental group in which the lecturer implemented computer-mediated corrective feedback (track changes, recast feedback, and metalinguistic feedback) whereas the rest students were assigned into a control group that applied automated writing evaluation. The findings showed that there was a significant effect of computer-mediated corrective feedback on students' second-language essay writing scores, fluency, and accuracy in the experimental group. The students in the experimental group achieved higher scores and better writing fluency and accuracy than those in the control group. Hence, this study revealed that computer-mediated corrective feedback has a remarkable effect in developing students' performance in second language essay writing skills. Furthermore, this study revealed that the role of lecturer in implementing computer-mediated corrective feedback remains crucial to successfully enhance the writing performance and develop writing skills of students in second language essay writing.

**Keywords:** computer mediated corrective feedback; ESL learners; writing skills; essay writing

### INTRODUCTION

The growing interest in integrating technology on developing students' second language skills has become a huge issue in recent SLA literature. Generally, the use of technology for second language learning focuses on improving communicative competence including receptive and productive activities (Saville-Troike, 2012). Specifically, technology used in second language learning in recent studies focus on providing feedback for students' second language accuracy and fluency thus improving their second language skill (Luo & Liu, 2017), (Huang & Renandya, 2020), (Miranty & Widiati, 2021). In this matter, these studies explore the integration of computer-generated feedback in process-based writing to observe students' writing accuracy and fluency further polishing their writing development in second language. Computer-generated feedback serves as an automated pedagogical tool which is created with artificial intelligence-based language processing and semantic analysis that provide second language learners with advanced corrective feedback to improve their second language writing accuracy and fluency (Zhai & Ma, 2022). The implementation of computer-generated feedback in second language writing has led students to master writing crucial elements, such as organization, coherence, linguistic features, and language content (Hockly, 2019). However, further studies indicated that computer-generated feedback had a low potential to improve students' second language writing skill development. The impact of computer-generated feedback on students' second language writing has not yet shown its most significant impact as there is an absence of teachers as one the vital roles in developing students' second language writing skills (Mohsen, 2022). Likewise, the immediate feedback and opportunities for self-correction provided in

computer-generated feedback cannot significantly facilitate students for second language writing effectively as computer-generated feedback is only a matter instructional tool rather than a substitute for the second language writing process (Hertz et al., 2022). Then, it is crucial to note that computer-generated feedback for students' second language writing skill has limitations as it did not significantly cover all nuances of linguistic features and language uses. Therefore, this study intended to investigate the use of Computer-mediated corrective feedback (CMCF) as another technology-integrated pedagogical method that balances and combines both automated pedagogical tools and teacher feedback to improve students' second language writing skills.

Computer-mediated corrective feedback (CMCF) refers to the use of technology-integrated pedagogical and instructional tools to provide corrective feedback to learners during educational or language learning activities. Practically, it involves the integration of computer-based tools, software, or devices to deliver feedback aimed at addressing errors or misconceptions in learners' work. In language learning, computer-mediated corrective feedback (CMCF) is valuable supplement tool for providing timely and targeted feedback on students' language accuracy and fluency including vocabulary, grammar, and pronunciation (Abuseileek & Abualsha'r, 2014) and (Pérez-llantada & Sauro, 2015). Moreover, the use of computer-mediated corrective feedback (CMCF) in second language writing focuses on providing feedback on various aspects of second language writing, including grammar, vocabulary, sentence structure, coherence, and cohesion. In this case, students received personalized feedback tailored to specific weakness and errors in students' second language writing primarily targets linguistic and language-related aspects that further supported by language instructor comprehensive feedback, contextualized feedback, and addressed content-related issues to support overall writing development (Mardian & Nafissi, 2022). Likewise, balancing the implementation of computer-mediated corrective feedback and teacher feedback is crucial as it can be very impactful for learning efficiency and effectiveness in second language writing activities. Then, several researchers highlighted that computer-mediated corrective feedback (CMCF) can be significantly effective and impactful if provided by synchronous teacher feedback. It is emphasized that the teacher is advised to provide feedback concurrently rather than after task completion to enhance computer-mediated corrective feedback (CMCF) transferability and effectiveness on students' writing (Al-Olimat & AbuSeileek, 2015). In addition, synchronous feedback including diversified tasks for treatment and immediate metalinguistic explanation from the teacher is important to optimize the effect thus developing students' second language writing skills (Gao & Ma, 2022) and (Mohsen, 2022). Hence, this study will fill the gap by investigating the effect of Computer-mediated Corrective Feedback (CMCF) on students' second language essay writing skills in experimental group that assigned with the lecture that implemented CMCF and students in control group that applied automated writing evaluation.

## METHODS

### *Participants and Setting*

This study employed quantitative methods, specifically quasi-experimental design, investigated the effect of Computer-mediated Corrective Feedback (CMCF) on first-year undergraduate students' second-language essay writing skills at a private university in Banten. Likewise, this study took place in the context of an 8-week English Essay Writing Course at a private university in Banten. English Essay Writing is a mandatory course for first-year undergraduate students that focuses on improving students' writing skills in which students plan an English essay based on language context and function to communicate in writing fluently and accurately. This course expects the students to master the concepts, strategies, and techniques of writing English essays in accordance with grammar, language structure, and writing mechanics that are accurate, coherent, logical, and effective. Participants in this study were 30 students of an English Essay Writing Course at a private university in Banten. The participants were aged about 19 and were all freshmen. In this case, the participants were divided in two different groups as the researcher applied control and experimental groups that one specific group of experiments received the treatment and implemented computer-

mediated corrective feedback (CMCF) and lecturer feedback concurrently (Creswell & Creswell, 2018).

#### *Data Collection and Procedures*

The data of this study were collected through an English writing test. In this matter, a writing test needed to measure students' writing ability on targeted language correctly, including the ability to generate, organize, compare, contrast and also develop ideas and further support those ideas with sufficient examples and evidence citation. Besides, writing tests also identify students' accuracy and fluency on seven writing aspects: content, structural organization within text, structural organization among sentences, grammatical accuracy, lexical appropriateness, punctuation, and spelling (Harmer, 2004). Practically, the students took a writing test that required them to write an English Essay of 150 – 200 words related to a particular topic within 45 minutes. There were two writing tests within six sessions over three weeks. The first writing test was conducted on the very first session of the English Essay Writing course that was classified as a pre-test. Accordingly, the pre-test was used to reveal and gather baseline data on students' initial essay writing skills before the treatment. In addition, pre-test in the experiment context is utilized as a guideline that the ability of students in control class and experimental class is relatively the same (Shadish, Cook, & Campbell, 2002). On the other hand, the post-test was conducted after the treatment lasted for four sessions in which students in experimental class applied computer-mediated corrective feedback (CMCF) and lecturer feedback concurrently whereas in control class the students utilized automated writing evaluation. The post-test was conducted to evaluate the effects of the intervention and compare the post-intervention results with the pre-test measurements (Shadish et al., 2002). Likewise, the result of the post-test will determine whether there is an increase in students' writing skills between control class and experimental class after receiving treatment.

This study lasted for six sessions in which the first session was focused on obtaining students' initial writing skills through pre-test. The second session was focused on providing the treatment for the students in each class. In the experimental class, the students were introduced to computer-mediated corrective feedback (CMCF) along with procedural steps. Furthermore, the lecturer explained eleven major writing aspects that covers 1) capitalization, 2) fragments and run-ons, 3) misused words, 4) negation, 5) noun phrases, 6) possessives and plurals, 7) punctuation, 8) questions, 9) relative clauses, 10) subject-verb agreement, and 11) verb phrases. Meanwhile, students in the control class were introduced to Automated Writing Evaluation in this case it was Grammarly that continued with explanations of eleven major writing aspects from the lecturer. Moreover, the third session was focused on giving feedback on students' essay themed descriptive writing. In the experimental class, computer-mediated corrective feedback (CMCF) was used along with the lecturer' feedback on track changes to give corrective feedback on students' descriptive essay writing. Conversely, students in the control group made use of Automated Writing Evaluation which gave them immediate feedback to correct their descriptive essay writing. Hereinafter, the fourth session focused on giving recast feedback mediated by computer-mediated corrective feedback (CMCF) on students' descriptive essays in the experimental group. In the opposite, students in the control group directly used Automated Writing Evaluation to further understand the errors, explanation, and suggestion provided to evaluate and revise their descriptive essay. In the last session of treatment, students in the experimental group further received metalinguistic feedback using a computer-mediated method that provides metalinguistic information assisted by the lecturer. In contrast, control class students kept overly using Automated Writing Evaluation personally to evaluate their writing in the absence of the lecturer. The final session of this research closed by conducting a post-test for all the students both in experimental and control groups to reveal their final writing score between those classes after getting the treatment within two weeks and investigate the effect of computer-mediated corrective feedback (CMCF) on students' writing skills.

**TABLE 1.** Summary of Research Procedures

| Session   | Experimental Class                                                                                                                                                                                                                                                                                                                                                                      | Control Class                                                                                                                                                                                                                                                                                                                                                           |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Session 1 | Pre-test                                                                                                                                                                                                                                                                                                                                                                                | Pre-test                                                                                                                                                                                                                                                                                                                                                                |
| Session 2 | <ul style="list-style-type: none"> <li>● Introduction to Computer-mediated corrective feedback (CMCF)</li> <li>● Eleven major writing aspects: 1) capitalization, 2) fragments and run-ons, 3) misused words, 4) negation, 5) noun phrases, 6) possessives and plurals, 7) punctuation, 8) questions, 9) relative clauses, 10) subject-verb agreement, and 11) verb phrases.</li> </ul> | <ul style="list-style-type: none"> <li>● Introduction to Automated Writing Evaluation</li> <li>● Eleven major writing aspects: 1) capitalization, 2) fragments and run-ons, 3) misused words, 4) negation, 5) noun phrases, 6) possessives and plurals, 7) punctuation, 8) questions, 9) relative clauses, 10) subject-verb agreement, and 11) verb phrases.</li> </ul> |
| Session 3 | <ul style="list-style-type: none"> <li>● Writing Descriptive Essay</li> <li>● Computer-mediated corrective feedback (CMCF): Track Changes</li> <li>● Lecturer synchronous feedback</li> </ul>                                                                                                                                                                                           | <ul style="list-style-type: none"> <li>● Writing Descriptive Essay</li> <li>● Automated Writing Evaluation</li> </ul>                                                                                                                                                                                                                                                   |
| Session 4 | <ul style="list-style-type: none"> <li>● Computer-mediated corrective feedback (CMCF): Recast Feedback</li> <li>● Lecturer synchronous feedback</li> </ul>                                                                                                                                                                                                                              | Automated Writing Evaluation                                                                                                                                                                                                                                                                                                                                            |
| Session 5 | <ul style="list-style-type: none"> <li>● Computer-mediated corrective feedback (CMCF): Metalinguistic feedback</li> <li>● Lecturer synchronous feedback</li> </ul>                                                                                                                                                                                                                      | Automated Writing Evaluation                                                                                                                                                                                                                                                                                                                                            |
| Session 6 | Post-test                                                                                                                                                                                                                                                                                                                                                                               | Post-test                                                                                                                                                                                                                                                                                                                                                               |

### *Data Analysis*

In this study, the collected data then were scored using writing scoring rubrics in which the marking scale included seven writing aspects: content, structural organization within text, structural organization among sentences, grammatical accuracy, lexical appropriateness, punctuation, and spelling. Furthermore, the data were analyzed quantitatively through Two sample t Test: equal variances. Two-sample t-test with equal variance is a statistical test used to compare the means of two independent samples, assuming that the populations from which the samples are drawn have equal variances (Boyhan, 2013). Therefore, it was used to determine whether there is a significant difference between the score of the two groups, experimental group that implemented computer-mediated corrective feedback (CMCF) and lecturer feedback concurrent and control group in which applied automated writing evaluation.

## **RESULTS AND DISCUSSION**

The study revealed findings that students who received corrective feedback mediated by computer and supported by synchronous feedback from the lecturer while writing essays performed slightly better than those who received automated writing evaluation. In this case, students in the experimental class performed quietly better than students in the control class in terms of writing essays. Specifically, students in experimental class received corrective feedback in terms of track changes, recast, and metalinguistic feedback. Those feedbacks provided by computer-mediated

corrective feedback help students to reformulate the unformed and unstructured text including sentence, phrase, word, metalinguistic information related to nature of the error indicated, lexical inappropriateness, grammatical inaccuracy, and mechanics of writing issues. Additionally, synchronous and immediate feedback from the lecturer during students' writing performance gave explicit knowledge bases of writing step-by-step providing feedback of major writing points.

Furthermore, students in the experimental class accomplished higher scores in the writing test than those in control class. The result of writing test analyzed through t-Test showed that students who received computer-mediated corrective feedback obtained mean score 83,47 in which higher compared with students who received automated writing evaluation that acquired mean score 72,31 as shown in Table.2 below:

**TABLE 2.** Mean Score of Writing Test

|             | <i>Control Class</i> | <i>Experiment Class</i> |
|-------------|----------------------|-------------------------|
| <b>Mean</b> | <b>72,31578947</b>   | <b>83,47368421</b>      |

Statistically, if the t Stat is higher than t table / t Critical one tail means the score of students in experiment class is higher than the score of students in control class. Likewise, if the p value /  $P(T \leq t)$  one tails is lower than alpha (0.05) also means score of students in experiment class is higher than score of students in control group as described below:

- $H_0: \mu_1 \leq \mu_2$  (Score of Students in Experimental Class and Score of Students in Control Class are the same)
- $H_1: \mu_1 > \mu_2$  (Score of Students in Experimental Class is higher than score of students in Control Class)

Accept  $H_0$  if t stat  $\leq$  t table or p-value  $>$  alpha ( $\alpha$ )

Reject  $H_0$  if t stat  $>$  t table or p-value  $\leq$  alpha ( $\alpha$ )

In this case, t Stat is 1.809 that is higher than t table / t Critical one tail in which 1.701 meaning reject  $H_0$  and Accept  $H_1$  can be interpreted as the score of students in the experiment class is higher than the score of students in the control group. Additionally, p value /  $P(T \leq t)$  one tails of this test is 0.030 in which lower than alpha (0.05) meaning Reject  $H_0$  and Accept  $H_1$  thus it can be concluded that the score of students in experiment class is higher than score of students in control class.

Furthermore, the finding of this study affirmed that students in experiment class accomplished higher scores than those in control class which means there is an effect of Computer-mediated Corrective Feedback (CMCF) on students' second language essay writing skills. Besides, the finding also emphasized the implementation of Computer-mediated Corrective Feedback (CMCF) supported the students' writing performance hence increased their writing score. Correspondingly, the finding of this present study confirmed the previous studies concerning usefulness of Computer-mediated Corrective Feedback (CMCF) for developing students' writing skills (Abuseileek & Abualsha'r, 2014) ; (Pérez-llantada & Sauro, 2015) ; and (Mardian & Nafissi, 2022). In this matter, Computer-mediated Corrective Feedback (CMCF) provided students with corrective feedback at the level of lexis, grammar, spelling, and increased their linguistic both input and output. In addition, this study revealed the students who were exposed to Computer-mediated Corrective Feedback (CMCF) performed better in writing as they received both implicit feedback in the form of recast along with track changes and explicit feedback in the form of metalinguistic feedback.

Specifically, students in the experiment group showed a better result in post-test after they received a treatment through Computer-mediated Corrective Feedback (CMCF) that lasted for six sessions. Those sessions were mainly focused on introducing procedural steps of CMCF and

reinforcing eleven major writing aspects. Likewise, the treatment through CMCF was supported by synchronous feedback from the lecturer to improve students' writing accuracy and fluency. Accordingly, this present study also in agreement with what is reported by (Al-Olimat & AbuSeileek, 2015) and (Gao & Ma, 2022) that the use of CMCF for students' second language writing should be provided by the lecturer's concurrent and synchronous feedback to increase the transferability and effectiveness of computer-mediated corrective feedback (CMCF) on students' writing. Additionally, this study revealed the students' writing score that received CMCF supported by lecturer's synchronous feedback is higher than previous study conducted by (Mohsen, 2022) in which students only received CMCF without further synchronous feedback from the teacher. In this case, the use of computer-mediated corrective feedback (CMCF) that is assisted and supported by lecturer's concurrent and synchronous feedback aids the students more in improving their second language writing performance and skill. Therefore, this study highlighted the importance of the lecturer's role in providing synchronous feedback along with the use of CMCF to successfully enhance the writing performance and develop writing skills of students in second language essay writing.

## CONCLUSION

The study aimed to investigate the use of Computer-mediated corrective feedback (CMCF) as a technology-integrated pedagogical to develop students' second language writing performance and improve second language writing skills. Notably, this study investigated the effect of Computer-mediated Corrective Feedback (CMCF) on students' second language essay writing skills. This study revealed a major finding that there is an effect on students' writing performance and their writing score is higher after receiving CMCF than those who received automated writing evaluation. Besides, this study highlighted that lecturer's synchronous feedback is crucial as it can be very impactful for efficiency and effectiveness of CMCF on students' second language writing performance, accuracy, fluency, and development. Hence, this study captured the importance of balancing the implementation of technological devices, specifically CALL (computer-assisted language learning) in a form of CMCF and the human element present in this matter is the lecturer to optimize the effect to develop students' second language writing skills.

Furthermore, this study suggested to include recast feedback, track changes, and metalinguistic feedback as both implicit and explicit writing feedback when implementing Computer-mediated Corrective Feedback (CMCF). Also, the lecturer's feedback should cover eleven major writing aspects as those are important to provide sufficient, specific, and constructive feedback that focuses on the strengths and areas for improvement in students' second language writing. Likewise, a minimum duration of treatment implementing CMCF should be at least six sessions in order to adequately provide those implicit and explicit writing feedback and eleven major writing aspects thus prompting the development of students' second language writing.

Moreover, this study raises an implication to further investigate which aspect of CMCF contributes the most to enhancing students' writing skills since this study was limited to examining the effect of CMCF in general on students' writing skills. Therefore, further studies are needed to investigate which aspect, whether track changes, recast feedback, metalinguistic feedback, or synchronous feedback from the lecturer in which contributes the most and most impactful to improving students' writing performance and skills.

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