

## **AI-POWERED MEDIATED SYNCHRONOUS CORRECTIVE FEEDBACK ON EFL SENIOR HIGH SCHOOL STUDENTS' PARAGRAPH WRITING SKILL**

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### **ABSTRACT**

*This study investigated the effect of AI-powered mediated Synchronous Corrective Feedback as an AI-based automated pedagogical aid on senior high school students' English writing skill. Correspondingly, this study was conducted through quantitative methods, specifically quasi-experimental research design. There were 30 eleventh-grade students as research subjects who were assigned into two different classes. Practically, 15 students were sorted to an experimental class in which implemented AI-powered mediated Synchronous Corrective Feedback supported by the teacher's corrective feedback in terms of track changes, recast and metalinguistic feedback. On the other hand, the rest of 15 students were assigned into a control class that personally applied AI-powered mediated Corrective Feedback. This study revealed there was a significant effect of AI-powered mediated Synchronous Corrective Feedback implemented in experimental class on students' paragraph writing score. Students in the experimental class significantly performed better in writing English paragraphs and obtained higher scores in the English paragraph writing test compared to students in the control class. Therefore, this study concluded AI-powered mediated Synchronous Corrective Feedback along with support, presence, and assistance of teachers in the matter of immediate and synchronous feedback was totally remarkable and crucial as it effectively and successfully improved students' writing skill and mastery in English Paragraph Writing.*

**Keywords:** Artificial Intelligence, Corrective Feedback, Writing Skill

## **INTRODUCTION**

Recently, the technology incorporation aims to enhance the efficiency and experience of language learning has already become a crucial matter in language learning. Integrating technology on developing students' language skill has become huge interests in recent studies (Huang & Renandya, 2020), (Gao & Ma, 2022) and (Mohsen, 2022). Correspondingly, the implementation of technology for English language learning focus on fostering students' receptive and productive activities for improving students' communicative competence. Moreover, the use of technology in English language learning is further applied to improve students' English language accuracy and fluency through providing corrective feedbacks on several linguistics features of English language. Technology implemented in English learning in recent studies focus on providing feedbacks for students' language accuracy and fluency hence improving their English language skill (Zulfa, Sari Dewi, Nuruddin Hidayat, Hamid, & Defianty, 2023), (Amanda Amanda, Elsa Muliani Sukma, Nursyahrina Lubis, & Utami Dewi, 2023), (Pratama & Hastuti, 2024), and (Al-Raimi, Mudhsh, Al-Yafaei, & Al-Maashani, 2024). The prior studies investigated the integration of a variety of technology-based applications specifically AI-powered for a specific English language skill, writing. The implementation of AI-powered application on English writing aims to provide corrective feedback and observe students' English writing fluency and accuracy to polish their writing skill development in English language.

AI-powered application is one of automated pedagogical aids that supported by artificial intelligence-based language processing, semantic analysis, and linguistics feature in which provide corrective feedback for English writing accuracy and fluency (Chui, 2022). AI-powered application in English writing provides grammar checking, semantic analysis, and linguistic features, such as language structure, organization, and content to improve students' writing accuracy and fluency including systematic, logical, consistent connection among sentences and paragraphs in English writing (Zhai & Ma, 2022). Regardless of how AI-powered application significantly implemented in many English writing activities, its potential and effect on improving students' writing skill need to be further studied. As AI-powered application only provide automated feedback

of students' English writing yet it doesn't eventually lead to students' English writing skill improvement. Likewise, several studies investigated the need of implementing AI-powered application along with immediate feedbacks from the teachers. The role of teachers in English writing activities is crucial in developing students' writing skill as they can support the students with genuine practices of linguistic features of writing and English language use (Al-Raimi et al., 2024). Since the implementation of AI-powered technology for English writing activity and learning need to be further assisted by the teacher, this study aimed to investigate the use of AI-powered mediated Corrective Feedback in which supported by teachers' immediate corrective feedbacks on improving students' English writing skill.

AI-powered mediated Corrective Feedback provides more rich and meaningful language learning as it balancing the integration of technology and teachers' presence. In the practice, AI-powered mediated Corrective Feedback aims to be an additional tool for providing grammar check, language accuracy and fluency, and linguistic feature of targeted language (Amaliyah Mushthoza Dina et al., 2023). It provides the integration of AI-powered software to address linguistics and semantics errors in students' writing task. Accordingly, AI-powered mediated corrective feedback facilitates students to obtain personalized feedback of specific information toward writing' weakness and errors in terms of linguistic and semantic aspects of language with supplementary comprehensive and contextualized corrective feedback from the teachers to support meaningful and effective language learning and development (Hwang & Nurtantyana, 2022). In this matter, the importance of merging the implementation of AI-powered technology and teacher' corrective feedbacks in which become AI-powered mediated Corrective Feedback is crucial. The implementation of AI-powered mediated Corrective feedback can be significantly impactful and effective for language learning and development. However, the integration of AI-powered mediated Corrective Feedback is needed to be further provided by synchronous feedback from the teacher in which providing certain explanation for immediate metalinguistic information and language use (Dong, 2023). Accordingly, this present study intended to fill the gap by investigating the effect of AI-powered mediated Corrective Feedback on students' paragraph writing skill at senior high school. This study will be conducted through implementing a quasi-experimental research design on two groups of students in which one group assigned to experimental group with

the use of AI-powered mediated Corrective Feedback along with teacher's synchronous feedback and those in a control group that personally applied AI-powered mediated Corrective Feedback.

## **RESEARCH METHOD**

The aim of this study was to investigate the effect of AI-mediated Synchronous Corrective Feedback on senior high school students' English paragraph writing skill thus a quasi-experimental design was applied in this study. Accordingly, this study employed in a context of English language subject at an eleventh-grade senior high school level. English language is a mandatory subject that taught in senior high school level that purposed to enhance students' English skills one of which is writing skill. Specifically, the students are expected to write an English paragraph based on particular genre-based text and topic also language context and function in a meaningful and accurate manner. Accordingly, students are further expected to be proficient writer at paragraph level and skilled in mastering linguistic features and language context of English paragraph writing. There were 30 eleventh-grade students participated as research subjects in this study that carried in English language subject. As a mean of doing the research, the students were divided in two different class, experimental class in which implemented AI-powered mediated Synchronous Corrective Feedback and control class which applied AI-powered mediated Asynchronous Corrective Feedback.

English paragraph writing test was the instrument to obtain a data needed for this study. It needed to calculate students' English paragraph writing skill including the ability to compose, structure, write, and develop English sentences into logical, coherent, and meaningful paragraph. Likewise, the test was also used to investigate students' English paragraph writing task according to seven writing aspects including topic or content, structural sentences organization, grammatical accuracy, and linguistic and language features (Harmer, 2004). In this study, students assigned with an English paragraph writing test to write a paragraph that composed of 150 words based on specific topic in 60 minutes. Accordingly, there were two tests, specifically pre-test and post-test, that carried out within 6 sessions over 3 weeks. First, pre-test was the initial test purposed to gather and display preliminary data on students' English paragraph writing skill ahead of the implementation of AI-powered mediated Synchronous/Asynchronous Corrective

Feedback. In the experimental research, pre-test was used as a prescription to verify the equal ability and skill between students in experimental class and control class (Shadish, Cook, & Campbell, 2002). Second, post-test was conducted to assess the outcome of the intervention thus further compare the post-test data with the pre-test results (Creswell & Creswell, 2018). Post-test was utilized after the implementation of AI-powered mediated Synchronous Corrective Feedback in the experimental class and AI-powered mediated Asynchronous Corrective Feedback in control class. Therefore, the data of post-test will reveal whether there is an improvement in students' English paragraph writing skills between control and experimental class after AI-powered mediated Synchronous/Asynchronous Corrective Feedback implemented.

This study enrolled in 6 sessions which started by conducting a pre-test to acquire students' preliminary English paragraph writing skill. The second session focused on implementing and providing a treatment for the students in two different class. In the experimental class, AI-powered mediated Synchronous Corrective Feedback along with its conceptual aspect and procedural steps were introduced to the students. Moreover, the English teacher discussed eleven majors of writing aspect including 1) capitalization, 2) fragments sentences and run-ons sentences, 3) misused vocabularies, 4) negation, 5) noun phrases, 6) plurals and possessives, 7) punctuation, 8) interrogative, 9) relative clauses, 10) subject-verb agreement, and 11) verb phrases. On the other hand, the students in the control class were introduced to AI-powered mediated Asynchronous Corrective Feedback along with explanation of eleven majors of writing aspect from the teacher. Moreover, the third session focused of providing feedback on students' English paragraph writing themed descriptive paragraph. In the experimental class, the implementation of AI-powered mediated Synchronous Corrective Feedback supported by the teacher's feedback specifically track changes as immediate feedback on students' English descriptive paragraph writing. Contrarily, students assigned in the control class provided by the use of AI-powered mediated Asynchronous Corrective Feedback to evaluate their descriptive paragraph writing task. Moreover, the fourth session centralized on further implementing AI-powered mediated Synchronous Corrective Feedback along with providing recast feedback on the students' descriptive paragraph writing from the teacher in experimental class.

Meanwhile, students in control class personally applied AI-powered mediated Asynchronous Corrective Feedback to evaluate and revise their descriptive paragraph writing task according to the identification, explanation, and suggestion appeared on the application. At the end of the session, students in experimental class obtained metalinguistic feedback including metalinguistic information provided by the teacher through AI-powered mediated Synchronous Corrective Feedback. On the contrary, students in control class continually applied AI-powered mediated Asynchronous Corrective Feedback to evaluate their descriptive paragraph writing work without any feedbacks from the teacher. Lastly, the final session of this research was concluded with a post-test for all the participants in which students both in experimental class and control class to obtain students' final score of descriptive paragraphs writing. The post-test revealed the students' descriptive paragraph writing final score after conducting and getting the treatment enrolled in two weeks hence examine the effect of AI-powered mediated Synchronous Corrective Feedback on students' English paragraph writing skill.

The data obtained from students' English paragraph writing pre-test and post-test were scored through writing scoring rubrics adapted from (Harmer, 2004). The scoring included marking scale that identified six writing aspects: context, sentence structural organization, paragraph structural organization, syntax accuracy, lexical semantic, and mechanics of writing. Likewise, the data were further quantitatively examined through Two sample t Test specifically equal variances. According to Boyhan, two-sample t-test equal variance is a statistical procedure utilized to compare the means of two independent samples, in this matter, assuming the populations from which the samples are revealed have equal variances (Boyhan, 2013). Accordingly, this procedure used in this study aimed to know whether there is a significant difference between the English paragraph writing score of experimental class that implemented AI-powered mediated Synchronous Corrective Feedback supported by teacher's concurrent feedback in terms of track changes, recast, and metalinguistic and control class in which personally applied AI-powered mediated Asynchronous Corrective Feedback.

## **FINDING**

The result of data analysis showed that students' English paragraph writing score in experimental class who implemented AI-powered mediated Synchronous Corrective

Feedback supported by teacher's feedbacks was higher than those in control class. In this study, the students in experimental class who provided with AI-powered mediated Synchronous Corrective Feedback and supported by teacher's corrective feedback in terms of track changes, recast, and metalinguistic feedback performed significantly better than students in control class in which personally applied AI-powered mediated Asynchronous Corrective Feedback. Accordingly, the result of students' English paragraph writing score that analyzed through t-Test showed that students in experimental class accomplished mean score 82,73 whereas students in control group obtained mean score 66,67 as displayed in the Table.1 below:

**Table 1. Mean Score of Writing Test**

t-Test: Two-Sample Assuming Equal Variances		
	<i>Control Group</i>	<i>Experiment Group</i>
Mean	66,6666667	82,7333333

According to statistical procedure, if the t Stat higher than t table / t Critical one tail meaning score of the students assigned in experiment class is higher than the students' score in control class. Correspondingly, if the p value /  $P(T \leq t)$  one tails is under/lower comparing to alpha (0.05) meaning score of students in experiment class is higher comparing to score of students in control class as described on this statistical formula 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 study, t Stat was 1.870 higher comparing to t table / t Critical one tail that was 1.701. It can be stressed that *Reject  $H_0$  and Accept  $H_1$*  in which further interpreted score of students in experiment class is higher than students' score in control group.

Accordingly, p value /  $P(T \leq t)$  one tails test of this study was 0.040 meaning lower than alpha (0.05). Likewise, the result is *Reject H0 and Accept H1* thus it can be concluded score of students in experiment class is higher than students' score in control class.

## **DISCUSSION**

The finding of this study emphasized students in experiment class obtained higher score comparing to students in control class. It can be affirmed there was an effect of AI-powered mediated Synchronous Corrective Feedback and supported by teacher's corrective feedback on students' English paragraph writing skill. Additionally, the result of this study also emphasized the implementation of AI-powered mediated Synchronous Corrective Feedback reinforced students' performance in writing paragraph and increased their paragraph writing score. Likewise, the finding of this study is relevantly confirmed several prior studies focusing benefit, efficacy, and value of implementing AI-powered technology for developing language skill of students (Zulfa et al., 2023), (Amanda Amanda et al., 2023), (Pratama & Hastuti, 2024), and (Al-Raimi et al., 2024).

In this study, the use of AI-powered mediated Synchronous Corrective Feedback supported by teacher's immediate feedback implicitly in the form of track changes and recast feedback and explicitly in terms of metalinguistic feedback reinforced students' performance in writing an English paragraph. Practically, students in the experiment class manifested higher score in paragraph writing test after received a treatment in which implemented AI-powered mediated Synchronous Corrective Feedback within 6 sessions. The session focused on introducing students to conceptual aspect and procedural concept of AI-powered mediated Synchronous Corrective Feedback along with 11 major of writing aspects. Accordingly, the support from teacher' synchronous corrective feedback in terms of track changes, recast, and metalinguistic feedback enhanced students' writing skill in the matter of accuracy and fluency. Those feedbacks provided by the teacher helped students to reformulate the unwell-structured structural organization of word, phrase, sentence and paragraph, inaccuracy and inappropriateness in lexical, semantic, and mechanics of writing.

Synchronous and immediate feedback from the teacher during students writing performance granted implicit and explicit knowledge for bases of writing through providing step-by-step feedbacks of major writing aspects (Godwin-Jones, 2022).



Likewise, this study confirmed of what was reported by (Hwang & Nurtantyana, 2022) to support the integration of AI-powered technology with the support from the teacher with regard to synchronous feedback aims to enhance the efficiency and usefulness of AI-powered on students' language learning. Correspondingly, this study also filled the gap of prior study conducted by (Dong, 2023) of the importance balancing the integration of AI-technology with the presence and assistance of teacher to further enhance the significant effect of integrating AI-powered mediated Synchronous Corrective Feedback on students' writing skill. Hence, this study is not only highlighted the significant effect of using AI-powered technology to improve students' writing skill but also emphasized the importance of teacher's role and presence to successfully integrating AI-powered mediated Synchronous Corrective Feedback for students' writing skill output and development.

## **CONCLUSION**

The rapid progression of integrating AI (Artificial Intelligence) into teaching and learning process has been significantly increased due to the need of creating immersive and captivating learning. In language learning, the use of AI-powered technology has been advanced as a new automated digital tool for better language learning. The integration of AI-powered technology is not merely on providing better and engaging language learning but also to improve the students' mastery and ability in language skills. Furthermore, the need of investigating the integration of AI-powered technology into specific language skill has led this present study to further investigate the effect of AI-powered mediated Corrective Feedback on students' English paragraph writing. Specifically, this study aimed to know the implementation of AI-powered mediated Corrective Feedback as an AI-powered technology pedagogical aid to enhance students' English paragraph writing performance and skill. This study showed crucial findings that emphasized the importance of merging AI-powered mediated Corrective Feedback supported by teacher's synchronous feedback on students' paragraph writing.

This study revealed that was a significant effect of implementing AI-powered mediated Corrective Feedback on students' paragraph writing performance and score as indicated by the result of data analysis that showed the students' writing score in experimental class was better also higher comparing to students in control class.

Moreover, this study also highlighted the importance role, presence, assistance, and synchronous feedback from the teacher to successfully integrating AI-powered mediated Corrective Feedback on students' writing performance and task. The teacher's synchronous feedback in terms of recast feedback, track changes, and metalinguistic feedback was very meaningful and impactful to develop students' writing performance and skill. Besides, teacher's synchronous and simultaneous feedback was effective to enhance students' paragraph writing mastery in terms of well-structured structural organization of word, phrase, sentence and paragraph, accuracy and appropriateness in lexical, semantic, and mechanics of writing. Therefore, this present study affirmed the importance of merging the implementation of AI-powered mediated Corrective Feedback and teacher's support in the matter of simultaneously assistance and immediate feedback not only to maximally optimize the integration of AI-powered mediated Synchronous Corrective Feedback but also to effectively and successfully improve students' writing skill and mastery in English Paragraph Writing.

## REFERENCES

- Al-Raimi, M., Mudhsh, B. A., Al-Yafaei, Y., & Al-Maashani, S. (2024). Utilizing artificial intelligence tools for improving writing skills: Exploring Omani EFL learners' perspectives. *Forum for Linguistic Studies*, 6(2), 1–14. <https://doi.org/10.59400/fls.v6i2.1177>
- Amaliyah Mushthoza Dina, Syariatun Nur, Olivia Tahalele, Sandra Ivonne Telussa, Rasmita, & Sabil Mokodenseho. (2023). Analyzing The Impact of Artificial Intelligence (AI) On the Future Of English Language Teaching And Learning. *Journal on Education*, 06(01), 1549–1557.
- Amanda Amanda, Elsa Muliani Sukma, Nursyahrina Lubis, & Utami Dewi. (2023). Quillbot As An AI-powered English Writing Assistant: An Alternative For Students to Write English. *Jurnal Pendidikan Dan Sastra Inggris*, 3(2), 188–199. <https://doi.org/10.55606/jupensi.v3i2.2026>
- Boyhan, G. (2013). - Two Sample Tests. *Agricultural Statistical Data Analysis Using Stata*, 76–87. <https://doi.org/10.1201/b15081-7>
- Chui, H. C. (2022). The QuillBot Grammar Checker: Friend or Foe of ESL Student Writers? *Journal of Creative Practices in Language Learning and Teaching (CPLT)*,

- 10(1), 2022.
- Dong, Y. (2023). Revolutionizing Academic English Writing through AI-Powered Pedagogy: Practical Exploration of Teaching Process and Assessment. *Journal of Higher Education Research*, 4(2), 52. <https://doi.org/10.32629/jher.v4i2.1188>
- Gao, J., & Ma, S. (2022). Instructor feedback on free writing and automated corrective feedback in drills: Intensity and efficacy. *Language Teaching Research*, 26(5), 986–1009. <https://doi.org/10.1177/1362168820915337>
- Godwin-Jones, R. (2022). Partnering with AI: Intelligent writing assistance and instructed language learning. *Language Learning & Technology*, 26(2), 5–24. Retrieved from <http://doi.org/10125/73474>
- Harmer, J. (2004). How to Teach Writing. *Overland*, Vol. 2018-Winte, p. 162.
- Huang, S., & Renandya, W. A. (2020). Exploring the integration of automated feedback among lower-proficiency EFL learners. *Innovation in Language Learning and Teaching*, 14(1), 15–26. <https://doi.org/10.1080/17501229.2018.1471083>
- Hwang, W.-Y., & Nurtantyana, R. (2022). *The integration of multiple recognition technologies and artificial intelligence to facilitate EFL writing in authentic contexts*. <https://doi.org/10.1109/InCIT56086.2022.10067490>
- Mohsen, M. A. (2022). Computer-Mediated Corrective Feedback to Improve L2 Writing Skills: A Meta-Analysis. *Journal of Educational Computing Research*, 60(5), 1253–1276. <https://doi.org/10.1177/07356331211064066>
- Pratama, R. M. D., & Hastuti, D. P. (2024). The use of artificial intelligence to improve EFL students' writing skill. *English Learning Innovation*, 5(1), 13–25. <https://doi.org/10.22219/englie.v5i1.30212>
- Shadish, W. R., Cook, T. D., & Campbell, D. T. (2002). Experimental and Designs for Generalized Causal Inference. In *Experimental and quasi-experimental design for causal inference*.
- Zhai, N., & Ma, X. (2022). Automated writing evaluation (AWE) feedback: a systematic investigation of college students' acceptance. *Computer Assisted Language Learning*, 35(9), 2817–2842. <https://doi.org/10.1080/09588221.2021.1897019>
- Zulfa, S., Sari Dewi, R., Nuruddin Hidayat, D., Hamid, F., & Defianty, M. (2023). The Use of AI and Technology Tools in Developing Students' English Academic Writing Skills. *The Annual International Conference on Education*, 1, 47–63.