Artificial Intelligence for Writing Enhancement: Exploring Learners' Motivation and Perceptions of AI Generated Feedback through Cambridge Write & Improve

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DOI: https://dx.doi.org/10.47772/IJRISS.2025.91100363

Received: 25 November 2025; Accepted: 01 December 2025; Published: 11 December 2025

ABSTRACT

The incorporation of Artificial Intelligence (AI) into language instruction has offered possibilities for enhancing English as A Second Language (ESL) learners' writing proficiency and motivation. This study investigates the impact of AI-generated feedback on learners' motivation in English writing using the Cambridge Write & Improve platform. This study was designed to explore the extent to which AI-generated feedback can improve learners' motivation in four constructs: self-efficacy, persistence, engagement and autonomy. A mixed-method design was employed in this study with 30 Year 5 ESL learners with mixed abilities in English writing from an urban Chinese vernacular primary school in Johor, Malaysia. A writing pre-test and post-test, a 5-point Likert Scale motivation questionnaire and semi-structured interviews were used to collect the data. The data from pre-test, post-test and questionnaire were analyzed using SPSS and subsequently triangulated with data from semi-structured interviews. Findings revealed a measurable improvement in writing performance with learners achieving higher grades in post-intervention writing test. Learners also reported to develop greater writing motivation with increased self-efficacy, sustained engagement, greater persistence in writing tasks and enhanced learner autonomy in revising written essays. The study demonstrated that AI feedback indeed supported writing skill development and strengthened motivational drives among ESL learners. These findings also address a significant gap in literature pertaining to learner motivation in relation to AI-supported tools to improve writing coherence. Further research can be conducted across different AI writing tools and explore cross-contextual implementations to determine the impact of AI-generated feedback on learners' writing motivation and writing proficiency.

Keywords- Artificial Intelligence, ESL Writing, Learner Motivation, Cambridge Write & Improve

INTRODUCTION

The advancement and integration of Artificial Intelligence (AI) have significantly redefined the way English as a Second Language (ESL) learners construct and process linguistic knowledge. This is attributed to the fact that AI delivers instantaneous feedback thus fostering sustained learner motivation in the language. Applications that were AI-driven have evolved into an integral component within the discipline of ESL education accredited to its capacity to generate prompt and grounded feedback that strengthen ESL learners' proficiency in writing. Wiboolyasari et al. (2024) highlighted in their findings that integrating AI-enhanced writing intervention indeed effectively improves students' writing performance. Writing constitutes one of the most cognitively demanding skills in ESL language learning as it entails a high degree of linguistic and affective demands. Kormos (2023) asserted that second language writing constitutes one of the most linguistically challenging activities for L2 learners and the composition process requires deliberate problem solving skills and robust self-regulation strategies. These distinctive demands frequently hinder ESL learners from progressing in the language development process, particularly for those whose first language is not English. A further obstacle which impedes writing proficiency arises from the limited linguistic competence among ESL learners. The persistent grammatical inaccuracies and inadequate mastery of vocabulary which gradually develop into persistent fear of making linguistic errors in writing, thereby undermining learners'

motivation and self-esteem. Learners with low self-esteem have the tendency to exhibit heightened levels of fear in making errors, reflecting an avoidance behavior and anxiety (Zogmaister & Maricutoiu, 2022).

In spite of the fact that teacher feedback serves as a crucial pedagogical component and effective element of language instruction in conventional classroom contexts, its implementation is often subject to constraints of heavy workload, time limitations and the number of pupils in a class. Feedback is an essential component of the teaching learning process as it serves as a bridge between teaching instruction and learner development (ElSayary, 2024).

This leads to the feedback that was provided could be generic and delayed which inadequately addresses the writing challenges faced by individual learners. These limitations may lead to frustration, discouragement and reduced interest among learners especially among the pupils who are of lower proficiency levels.

The integration of AI-powered writing platforms offers an alternative pedagogical approach by providing enhanced feedback which is immediate and individualized for the learners. AI-driven writing applications offer immediate corrective input which aids to revision on grammatical structures, syntax and spelling accuracy (Khan & Khan, 2024; Afzaal et al., 2021). All of these innovative and user-oriented features are pedagogically features which were being incorporated into Cambridge Write & Improve, an AI-enhanced platform, which offers learners to be accessible with a writing support environment that facilitates improvement of writing proficiency. Cambridge Write & Improve employs the Common European Framework of Reference which serves as its primary source and benchmark for the validation of English language that was being input by the ESL learners. This application also adopts an algorithm which exhibits an advanced natural language processor, thus delivering instantaneous formative feedback which possesses lexical and grammatical accuracy. Consequently, learner autonomy and engagement are fostered during the writing process, resulting in easy access of learning opportunities beyond classroom boundaries; thereby strengthening motivation and consistency in writing development.

Writing is often perceived as one of the least engaging language skills within the Malaysian ESL context. Writing is a highly intricate skill that is required to be acquired by learners because it demands greater cognitive precision as compared to everyday conversation (Graham & Alves, 2021; Nation, Dawson & Hsiao, 2022). The majority of the learners are reluctant to revise their written compositions or take responsibility to revise the task as they depend predominantly on teachers to provide the correction. Zhang and Zhang (2023) reported that learners indeed exhibit reliance on teachers to identify the linguistic errors in their work and provide the corrective feedback. AI-based writing tools have the potential to address these issues to promote a participatory learning process which will enhance learners' confidence and motivation to complete the writing task. Although AI-assisted writing tools have been a widespread adoption in education, existing empirical studies remain to be centered on linguistic accuracy and remedial functions of the tools. Limited scholarly attention has been directed examining the potential of AI writing tools in shaping learners' motivational implications and affective responses during the writing processes. Considerably fewer studies have examined the learners' engagement and motivation patterns while employing automated feedback platforms to improve textual coherence in writing tasks. While prior research has increasingly examined automated feedback in language learning, there remains a gap in exploring learners' motivation drives when interacting with AI-driven platforms to enhance coherence in writing tasks (Liu et al., 2025). This has resulted in learner motivation to remain as an underexplored area in the context of writing development is assisted by AI writing tools. Learners' motivation in writing constitutes a vital affective factor that influences their language development and acquisition.

Research on writing motivation has been comparatively overlooked on the younger ESL learners, with most studies focusing on the adult or tertiary group of learners. Among the elementary level of learners, motivation is particularly influenced by emotional responses to feedback, self-efficacy and the desire of obtaining learner autonomy. It is essential to examine the extent to which AI-generated feedback can address the affective domains which could foster positive learner engagement in enhancing learning. The affective domains include motivation, self-efficacy and anxiety that persist during the writing process. The Cambridge Write & Improve AI learning platform has integrated adaptive technology and a well developed instructional design which are suitable for this study. Therefore, this study examines the impact of AI writing tools on learners' motivation in

English writing with a particular focus on AI-enhanced feedback possessed on Cambridge Write & Improve.

This study is significant as it is grounded with theoretical and pedagogical perspectives. This study contributes to the current research and the growing field in AI that seeks to understand the motivational dimensions of AI being integrated in language learning. This study enriches the literature by extending the conceptualization of AI beyond its sole function as merely error correction. By exploring how automated feedback in writing shapes learners' motivation, self-esteem, engagement and autonomy, this study broadens the corpus of research in AI education. The findings of this study could contribute to the development of more effective feedback ecosystems which artificial intelligence could serve as a complementary tool in learning instruction. AI-based platforms have the potential to provide individualised and prompt feedback that promotes autonomy among learners (Mohebbi, 2025). With the aid of AI writing tools, teachers could redirect their instructional practices to foster self-regulated learning which includes idea development and writing coherence. Upon understanding the perspectives of learners, Cambridge Write & Improve may assist teachers to incorporate AI technology in teaching and learning, ensuring that learner autonomy enhances writing. Ultimately, this study demonstrates the potential of AI to fundamentally improve the writing process towards a more autonomous and motivation guided approach in language learning.

Research Objectives

Based on the background and problem statement discussed above, the research objectives of this study are formulated as follows:

1. To investigate the impact of AI-generated feedback on learners' motivation in English writing using the Cambridge Write & Improve platform.
2. To explore learners' perceptions of AI feedback in enhancing writing confidence.

Research Questions

1. To what extent does the use of Cambridge Write & Improve influence learners' motivation in English writing?
2. What are the learners' perceptions of AI-generated feedback in improving their writing confidence?

LITERATURE REVIEW

Artificial Intelligence and Feedback in Language Education

Traditional approaches of writing instruction were fundamentally transformed by the incorporation of Artificial Intelligence (AI) into language education. AI technologies have been employed across diverse instructional domains of ESL learning such as vocabulary development, automated essay evaluation and individualized feedback on written language (Huang, Zou, Cheng, Chen & Xie, 2023). AI-powered platforms such as Grammarly, ChatGPT and QuillBot have the capability to facilitate learners' writing development as it could detect linguistic errors, offer a model of syntactic structures and provide instant suggestions to writing (Abdullah, 2025; Asad et al., 2024). These inherent functionalities are supplementing teachers' feedback and providing a chance for educators to concentrate on teaching critical and creative structures of writing among learners. A notable pedagogical development in AI-assisted writing instruction is seen among the available AI writing tools which generate automated feedback. It has the potential to facilitate improvement and ongoing self-learning as it encompasses not merely the ability to detect grammatical errors, but also the functionality to generate precise diagnostic feedback that enhances learners' written work (Liu, Hou, Tu, Wang & Hwang, 2023). Research demonstrates that timely feedback enhances cognitive engagement and sustain learners' focus through the whole process of completing the writing task (Zou, Xie and Wang, 2023). AI platforms support individualized, differentiated instruction through a mechanism that is designed to minimise learner anxiety, particularly to those who are facing overcrowded classrooms with limited teacher feedback. This could enhance linguistic accuracy and nurture learners to take charge of their learning and promote intrinsic motivation in writing.

Motivation in Writing

Motivation is a psychological construct that mediates between learners' affective and cognitive orientations which include beliefs, attitudes and emotions that were demonstrated during writing practices (McGrew, 2022). Self-efficacy, intrinsic interest and anxiety reduction are the key motivational constructs that collectively determine the willingness of learners to initiate and complete the writing task (Wu, Yang, Liu & Liu, 2022). In the ESL contexts, learner motivation in writing is a decisive factor that directly influences learners to be persistent and improve the quality of their written performance. Writing performance improvement and the willingness to take risks in linguistic errors are strongly correlated with writing self-efficacy (Khamis, Yunus & Mansor, 2024). Self-efficacy constructs the learners' belief and confidence in their ability to complete the provided writing tasks effectively. Learners who possess a strong sense of self-efficacy and intrinsic motivation are often persistent and resilient learners (Shi & Zhang, 2025), thus their writing performance is often enhanced.

Social Cognitive Theory

This study is grounded in Bandura's Social Cognitive Theory (1986) which underscores the interdependent and adaptive nature of personal beliefs, behavioral patterns and environmental contexts in shaping learner motivation and learning process (Woreta, Zewude & Jozsa, 2025). The central of this framework is the concept of self-efficacy which is the belief in self ability to perform necessary actions required to attain desired performance goals and outcomes. Self-efficacy is far from being merely a reflection of self ability, whereas it profoundly shapes how individuals think, feel and act in pursuit of achievement (Hamann et al. 2024). Within the context of ESL, it serves as learning motivation which drives learners to exhibit greater perseverance and maintain consistent effort when undertaking writing tasks which are complex.

The four fundamental sources which shape the development of self-efficacy are verbal persuasion, mastery persuasion, vicarious experiences, physiological and affective states of learning. Mastery experience is one of the most influential key factors which offers direct validation of learners' competence to reinforce their confidence and motivation for future challenges that they face in the ongoing learning process (Almulla and Al-Rahmi, 2023). On the other hand, vicarious experience which is derived from observing peers' accomplishments and improvements of others' progress contribute to the shaping of learners' stronger beliefs in their own self-efficacy. Mastery experiences exert the most influential factor of a successful task completion as it provides validated feedback of learners' competence. Physiological and affective states are strongly related to emotions such as fear, anxiety and self assurance. These emotional factors which consist of constructive feedback or encouragement would influence learners' confidence in accomplishing language tasks. These elements are integrated in an adaptive manner to produce an emergent outcome that facilitates learners' readiness to write with confidence and persevere through the editing process which drives a sense towards fulfilment of the task.

Bandura's Social Cognitive Theory offers an integrative framework for examining the role of self assessment in shaping learners' behaviours within the context of writing motivation. Learners who possess strong self-efficacy in writing tend to regard challenges as chances for improvement, thus exerting more effort in responding to constructive feedback provided. Conversely, learners with diminished self-efficacy are more likely to avoid writing tasks, exhibit greater anxiety and attribute setbacks as self limited ability instead of opportunities for improvement. Research in ESL learning has demonstrated that self-efficacy as a reliable predictor of writing achievement and key to perseverance writing motivation (De Smedi, Landrieu, De Wever and Van Keer, 2023). High levels of self-efficacy promotes self-regulated learning processes which include a personal goal setting, systematic planning of learning strategies and reflective revision, which all of these are essential to the advancement of writing proficiency.

METHODOLOGY

Research Design

This study investigates the impact of AI-generated feedback on learners' motivation in English writing and

their perceptions on the feedback given by the AI-assisted platform in enhancing writing confidence. This study employed a mixed-method research design which integrated both quantitative and qualitative approaches for the collection of data and analysis. The quantitative component consisted of pre-test and post-test writing assessments, with a structured questionnaire on learners' motivation which allowed measurement on the writing proficiency and motivational levels. The qualitative insights were collected through semi-structured interviews which capture learners' perceptions on the AI-generated feedback in enhancing writing confidence. The intervention consisted of two structured writing sessions with participants receiving immediate AI support and feedback guidance in completing the writing tasks. This study adopted an explanatory sequential mixed-method design with the quantitative data contextualized by qualitative data, thus strengthening the credibility and depths of findings. This approach was selected to provide comprehensive understanding on both measurable outcomes and subjective learners' experiential perspectives, which is essential for the investigation of the complex constructs in writing motivation.

Participants

The study was conducted in an urban Chinese vernacular primary school in Johor Bahru Malaysia which comprised 30 Year 5 ESL learners. Among the 30 participants selected in this study, there were 13 boys and 17 girls. Year 5 pupils were selected due to their developmental readiness to undertake structured writing tasks and their growing ability for self-regulated learning. This age group of participants are 11 years old and they have possessed sufficient linguistic competence to engage in extended composition tasks and would be able to respond effectively to feedback. Thus, making them ideal to be selected in examining the motivational impact observed from the AI-assisted writing intervention. Purposive sampling method was used to select participants from diverse ethnic backgrounds (Malay, Chinese and Indian), and across a range of writing proficiency levels. This strategy allowed for the investigation on how AI-generated feedback influenced learners with different abilities and confidence, ensuring the findings captured a broad spectrum of motivational responses. The sample size supported the robust quantitative analysis and detailed qualitative exploration. The participants' diversity and proficiency levels reinforced the validity of study.

Instruments

In order to obtain a thorough understanding of learners' motivation and writing performance in this study, three instruments were employed to collect both quantitative and qualitative data. First, pre-test and post-test essay writing assessments were administered with a given time frame of 30 minutes to assess initial writing proficiency and measure improvements followed by the intervention. The essay tests were evaluated using a detailed rubric which assessed linguistic accuracy, coherence, word choice and overall task completion. Second, a motivation questionnaire which is adapted from the Writing Motivation Questionnaire (Graham et al., 2022). This instrument measured the key constructs related to writing motivation, including self-efficacy, persistence, engagement and autonomy. The questionnaire items were presented on a five-point Likert scale, and a pilot study demonstrated an acceptable internal consistency with a Cronbach's alpha of 0.85. Lastly, semi-structured interviews were conducted to gather data on learners' perceptions on using the AI-assisted platform "Cambridge Write & Improve" and how it improves their writing confidence. The interview was conducted with six respondents and the interview protocol consisted of open-ended questions which are simplified for clear comprehension of Year 5 learners. This instrument complemented the quantitative findings and provided a deeper understanding of motivational mechanisms underlying AI-assisted learning tool.

Data Collection

Data of this study was collected through a sequential, multi-phase process. At the initial stage of the data collection procedure, the participants completed a pre-test essay assessment to establish a baseline performance on their writing proficiency. Then, the participants participated in two structured writing sessions supported by an AI writing tool, Cambridge Write & Improve with generated feedback provided. Each session lasts for an hour with learners uploading a written essay to the AI platform and they would be given feedback on highlights and constructive comments on which area to improve. Once learners have understood the feedback, they correct their essay attentively until they achieve a higher band as indicated in Cambridge Write & Improve. After that a post-test was administered. After that, a post-test was administered. Later, the

participants responded to the Motivation Questionnaire with each item clarified to them before answering. Finally, semi-structured interviews were conducted on 6 participants and the interview data were transcribed for data analysis. This sequential process ensured qualitative reflections were specifically informed by the engagement in the writing tasks, providing enriched insights for motivational impacts and learners' perceptions on the use of AI aids in writing.

Data Analysis

An explanatory sequential method was implemented for data analysis to improve findings' validity and credibility. SPSS was used to analyze the quantitative data which includes pre-test, post-test scores and responses from the motivation questionnaire. Descriptive statistics which encompass means, frequencies and percentages were calculated to identify patterns in learners' motivation, engagement and perceptions of employing "Cambridge Write & Improve" AI tool in the process. The impact of the intervention was empirically presented by comparing the scores between pre-test and post-test to determine measurable improvements of participants in writing performance. The data collected from semi-structured interviews were transcribed verbatim and coded to be thematically analyzed. Findings from writing assessment scores, questionnaire and semi-structured interviews were triangulated to align participants' reported experiences with measurable improvements in motivation and writing performance. This will ensure the validity and reliability of the study and enable researchers to analyze the obtained results and formulate conclusions for the research.

FINDINGS

Learners' Improvement in Writing

Learners' writing performance was evaluated based on the comparative analysis of pre-test and post-test scores collected prior and after the intervention being implemented. Learners' scores were interpreted according to the grading criteria of the standardized Ujian Akhir Sesi Akademik (UASA), which is also referred to as End of Academic Session Assessment, formally established by the Malaysia Ministry of Education (MOE). The raw scores collected from both of the tests were converted into percentage and subsequently grouped into six performance grades (A-F) to ensure the scoring consistency. The comparison between learners' performance levels were presented in Table 1.

Table 1 Pre-test and post-test results

Grades	Range of scores (%)	No. of learners	
		Pre-test	Post-test
A	82-100	1	6
B	66-81	3	17
C	50-65	6	7
D	35-49	15	0
E	20-34	4	0
F	0-19	1	0
TOTAL		30	30

According to Table 1, the participants have demonstrated a notable improvement in writing performance subsequent to the intervention implemented. For Grade A , the number of participants attained the results have shown an increase of 5 participants, which rose from 1 to 6 participants. It reflected a substantial enhancement in writing proficiency. In Grade B, only three participants obtained the grade in pre-test, while in post-test, the

number of participants obtained Grade B increased to 17 participants. The results followed by the intervention indicated that the majority of participants advanced from moderate to higher level of proficiency. Meanwhile, Grade C witnessed a modest rise from six to seven participants. Simultaneously, the number of participants who achieved Grades D, E and F were reduced to zero in the post-test. These findings indicated that the use of Cambridge Write & Improve as the AI-supported platform indeed facilitated the participants to achieve at least a foundational grade and competency in writing. Furthermore, the absence of participants in the lower grades illustrated an enhancement in overall performance of writing proficiency.

The findings from the motivation questionnaire corroborated the test results, demonstrating a positive shift in learners' motivation levels followed by the intervention. Specifically, 96.7% of participants agreed or strongly agreed that the use of Cambridge Write & Improve boosted their confidence in writing, 60% of participants strongly agreed that the AI feedback motivated them to write more and 86.7 % of participants indicated an increased capacity for autonomous writing and revision even when they were not required to. Furthermore, findings from the semi-structured interviews reinforced the quantitative results and revealed that participants possessed greater ownership of their writing development by constantly involving in self-regulated learning followed by the reduction of fear with the feedback provided by Cambridge Write & Improve. This is equivalent to the data from the interview where P3 stated, "I checked my grammar by myself and tried to fix mistakes. I wanted to get a better level the next time." Another participant also mentioned that he felt less fear and more confident with the feedback provided by Cambridge Write & Improve. P1 stated that, "I worried that I did everything wrong, but then I looked at the comments and they were not so bad."

The data indicated that learners from all proficiency levels gained benefits and demonstrated improvements followed by the intervention of applying AI-assisted tools which generate immediate feedback for English writing. The findings highlighted that learners who were initially at the lower or intermediate levels observed to have the greatest progress and pronounced improvements. These improvements indicated the successful integration of AI-generated feedback which enhanced writing fluency, grammatical accuracy and syntactic development. The findings are aligned with prior research which claimed that AI-assisted feedback facilitated writing proficiency by providing prompt and individualized feedback that fosters self-correction (Mohammed & Khalid, 2025). The results suggest that AI platforms support learners from varying proficiency levels by enhancing self-efficacy and promoting motivation in writing. These outcomes validated the research objectives of exploring learners' motivation in English writing using the Cambridge Write & Improve platform.

Learners' Perceptions of AI-generated Feedback in Improving Writing Confidence and Motivation

Correspondingly, the results from the motivation questionnaire revealed an increase in learners' self-efficacy, persistence, engagement and sense of autonomy with the aid of the AI writing platform, Cambridge Write & Improve. A post-intervention writing motivation questionnaire was administered to thirty Year 5 ESL learners to evaluate the effects of Cambridge Write & Improve on their motivational levels in writing. The instrument employed a 5-point Likert scale to measure four key constructs of motivation which consists of self-efficacy, persistence, engagement and autonomy. The findings are tabulated in SPSS to obtain the percentage, mean and standard deviation which are presented in Table 2 to Table 5.

AI-Generated Feedback Enhances Self-Efficacy

Table 2 Mean Score and Standard Deviation of Self-Efficacy

No	Item	SDn(%)	Dn(%)	Nn(%)	An(%)	San (%)	Mean	Standard Deviation
1	I feel more confident in my writing after using Cambridge Write & Improve.	0 (0)	0 (0)	1(3.3)	12(40)	17(56.7)	4.53	0.56
2	I believe I can improve better at writing by using feedback from Cambridge Write & Improve.	0 (0)	0 (0)	0 (0)	16 (53.3)	14 (16.7)	4.47	0.50
3	I feel proud of the writing I improve.	0 (0)	0 (0)	0 (0)	14 (46.7)	16 (53.3)	4.53	0.50

4	The feedback from Cambridge Write & Improve makes me feel more confident about my writing.	0 (0)	0 (0)	0 (0)	13 (43.3)	17 (56.7)	4.57	0.50

SD = Strongly Disagree, D = Disagree, N = Neutral, A = Agree, SA = Strongly Agree

Following the engagement with AI-generated feedback delivered by the Cambridge Write & Improve application throughout the writing process, the participants were reported to demonstrate high self-efficacy. This was observed in the mean scores which exceed 4.40 and above, reflected in each of the questionnaire items. Table 2 shows the self-efficacy constructs with the application of Cambridge Write & Improve in English essay writing. The highest mean among the items observed is item 4 with a mean of 4.57. Twenty-nine pupils (96.7%) of participants agreed that the implementation of Cambridge Write & Improve makes them feel more confident in their writing. Similarly, the feedback which was provided by the application enhances learners' confidence level in their writing and was agreed by all thirty learners (100%). The participants also gained stronger belief in themselves that they can improve better with the feedback provided by Cambridge Write & Improve, recording a mean of 4.47. As a result, the learners were proud of the writing that they had improved with the help of AI feedback which this item carried a mean of 4.53.

The findings collected from the questionnaire suggest that learners developed higher confidence levels in their abilities and recognized measurable improvements in their writing proficiency. These results were reinforced by the interview excerpts from Participant 1 that mentioned his confidence level was increased by the precise feedback on areas to be improved "It told me exactly what I needed to fix. I knew I could do it if I tried." In addition, the positive reinforcements received from the feedback indeed increase learners' self-efficacy in writing. This is evident as expressed by P3 who said, "The part that said "good sentence" or "well-organized paragraph." It made me believe I can write long essays." and P4 who reported that, "The words like "good effort" or "improving." It made me feel I'm getting better." The data validated that AI feedback positively influenced learners' self-efficacy and confidence. Moreover, these perceptions are consistent with writing performance improvements observed in the post-test results where more participants achieved higher grades in post-test, indicating that self-efficacy was enhanced among learners and as a result, a measurable gain was observed.

Positive Effect of Cambridge Write & Improve on Learner Persistence

Table 3 Mean Score and Standard Deviation of Persistence

No	Item	SDn(%)	Dn(%)	Nn(%)	An(%)	SAn(%)	Mean	Standard Deviation
1	I want to keep improving my writing with help from Cambridge Write & Improve.	0 (0)	0 (0)	0 (0)	12 (40)	18 (60)	4.60	0.49
2	I keep working on my writing even when it's difficult because the feedback from Cambridge Write & Improve helps me improve.	0 (0)	0 (0)	1 (3.3)	9 (30)	20 (66.7)	4.63	0.55

SD = Strongly Disagree, D = Disagree, N = Neutral, A = Agree, SA = Strongly Agree

The questionnaire results highlighted that the learners exhibited high levels of perseverance and they are persistent to improve their English writing following the Cambridge Write & Improve intervention. The

descriptive statistics for the construct of persistence are tabulated in Table 3. The results reflect learners' willingness to exert effort to continue improving their writing skills despite encountering challenges. As observed in Item 1, 12 learners (40%) agreed and 18 learners (60%) strongly agreed that AI feedback motivated them to be persistent in improving their writing, leading to a mean score of 4.60. Pertaining to Item 2, the majority of participants indicated strong agreement (66.7%), 30% agreed while only one participant (3.3%) selected a neutral response with regard to the persistence in writing despite undergoing difficulties as the feedback provided facilitated writing enhancement. Collectively, the results suggest that AI feedback effectively supports learners with clear guidance and motivation thus encouraging persistence in completing the writing tasks.

The data from semi-structured interviews further support the findings from the questionnaire and revealed learners perceived AI feedback as a catalyst in promoting perseverance to sustain their effort in writing. For instance, P2 commented, ""I tried to change the words or the sentence structure like the comments said. Sometimes I read slowly and rewrite it again." while P4 stated, "I tried rewriting my story. I looked at each sentence and fixed one by one. It took time but I didn't give up." These excerpts reinforce the results, indicating that learners were reported to exhibit higher perseverance and engaged in self-directed revision in writing tasks. Additionally, learners' improvement in writing skills as observed in post-test are consistent with the persistence aspect as reflected in the questionnaire. The consistency of the findings from post-test, questionnaire and interview demonstrates that AI feedback supports learners' persistence in enhancing motivation and writing performance among ESL learners.

Increased Engagement with Help of Cambridge Write & Improve

Table 4 Mean Score and Standard Deviation of Engagement

No	Item	SD n (%)	D n (%)	N n (%)	A n (%)	SA n (%)	Mean	Standard Deviation
1	I enjoy writing more and feel less worried when I use Cambridge Write & Improve.	0 (0)	0 (0)	0 (0)	12 (40)	18 (60)	4.60	0.49
2	I write more when I get feedback from Cambridge Write & Improve.	0 (0)	0 (0)	1 (3.3)	11 (36.7)	18 (60)	4.57	0.56

SD = Strongly Disagree, D = Disagree, N = Neutral, A = Agree, SA = Strongly Agree

The descriptive statistics presented in Table 4 indicated that learners demonstrated high engagement while using Cambridge Write & Improve while performing the writing tasks. The mean scores for both items pertaining to the construct of engagement were exceeding 4.50. This suggests that the AI platform has enhanced learners' behavioral and emotional involvement to engage more extensively within the writing process. Table 4 presents that the first item under the engagement construct has achieved a mean of 4.60 (SD = 0.49), with all the participants providing positive responses, with 12 participants (40%) agreeing and 18 participants (60%) strongly agreeing. All of the participants agreed that they enjoy writing more and feel less worried when they use the platform, Cambridge Write & Improve. These results indicate that the feedback generated from the AI platform effectively reduced learners' learning anxiety and fostered higher levels of enjoyment in writing, thus reinforcing continued engagement.

In response to the second item, only one participant (3.3%) reported a neutral response, while 11 participants (36.7%) agreed and 18 participants (60%) strongly agreed that they write more when they received the feedback from Cambridge Write & Improve. The item yielded a mean score of 4.57 (SD = 0.56) suggesting that the immediate and personalized feedback provided indeed fostered enhanced engagement in writing. The

qualitative data provides richer insights into the way AI feedback enhances engagement. Participant 3 commented, "The part that said "good sentence" or "well-organized paragraph." It made me believe I can write long essays." while P1 commented, "The part that told me I did some sentences really well. It made me feel proud and that I can write better." In addition, P3 also mentioned, "I felt excited! Because I wanted to know how many sentences I got right." These excerpts emphasized that immediate feedback provided positive reinforcement that could reduce anxiety and encouraged learners to be actively participating in the writing process.

Cambridge Write & Improve Fosters Learner Autonomy

Table 5 Mean Score and Standard Deviation of Autonomy

No	Item	SD n (%)	D n (%)	N n (%)	A n (%)	SA n (%)	Mean	Standard Deviation
1	I choose to use Cambridge Write & Improve because it helps me improve my writing.	0 (0)	0 (0)	1 (3.3)	15 (50)	14 (46.7)	4.43	0.56
2	I choose to use Cambridge Write & Improve because it is easy to use and interactive.	0 (0)	3 (10)	0 (0)	11 (36.7)	16 (53.3)	4.33	0.91
3	I can use Cambridge Write & Improve even when it's not required, without having to wait for my teacher's feedback.	0 (0)	4 (13.3)	0 (0)	9 (30)	17 (56.7)	4.30	1.01

SD = Strongly Disagree, D = Disagree, N = Neutral, A = Agree, SA = Strongly Agree

The questionnaire findings also revealed that students reported an increase in autonomy while engaging with Cambridge Write & Improve. Descriptive statistics for the three questionnaire items assessing the autonomy construct are presented in Table 5, with mean scores ranging from 4.30 to 4.43. For the first item, 50% of participants agreed and 46.7% of participants strongly agreed with the statement that they choose to use Cambridge Write & Improve as it helps them to improve writing. This indicated a mean score of 4.43 (SD = 0.56), highlighting that learners were intrinsically motivated to engage with the AI platform as a self-directed writing tool to enhance their writing proficiency. The second item which stated that the ease of use of the app and its interactive feature contribute to the reason that it is chosen to be applied in improving writing proficiency had a mean score of 4.33 (SD = 0.91). 16 participants (53.3%) strongly agree and 11 participants (36.7%) selected agree to its ease of use and interactive feature, whereas only 3 participants (10%) disagreed to this. The results have suggested that the platform was designed to be interactive and easily accessible to support autonomy in composing the tasks with minimal guidance. It is proposed to include more interactive and interesting elements to facilitate learner engagement and cater to the needs of multimodal learning.

Pertaining to the third item, using Cambridge Write & Improve voluntarily without having to wait for teacher's feedback has yielded a mean score of 4.30 (SD = 1.01), with 30% agreeing and 56.7% strongly agreeing. These findings demonstrate that AI tools support independent writing, enable learners to engage in self-directed learning and encourage autonomy even beyond classroom instruction. The interview data supported the quantitative findings which highlighted the learners' autonomy. For instance, P1 explained, "Yes, like I can fix mistakes without asking the teacher all the time." and P3 commented that, "I improved without asking my teacher. I felt like a real writer!". Moreover, independent learning was observed in P4, "I tried rewriting my story. I looked at each sentence and fixed it one by one. It took time but I didn't give up." and P2 remarked, "I

fixed mistakes myself. I like it when I can do it alone.". Similarly, P1 was happy to be able to correct the mistakes independently as mentioned, "I fixed my mistakes myself. I didn't need to ask the teacher, so I felt happy and proud." Collectively, these responses demonstrate that learners are willing to take responsibility in their writing, reflecting that the platform, Cambridge Write & Improve, had effectively promoted autonomy in the writing process.

DISCUSSION

Enhanced Writing Proficiency and Motivation Through AI-Generated Feedback

The overall findings of the study reveal that consistent application of Cambridge Write & Improve have substantially improved learners' writing proficiency and motivation. The findings indicated that learners' improvements were evident across the core writing components which include linguistic accuracy, coherence, vocabulary and holistic task completion based on the results from post-test. These positive performance developments were complemented by strong motivational outcomes across four motivational constructs which include self-efficacy, perseverance, engagement and autonomy, which have yielded high mean scores ranging from 4.30 - 4.63. Collectively, these results have proven that AI feedback indeed strengthened learners' writing skills and fostered more confident, autonomous and engaged learners to improve in the writing component. The triangulation of data with the interview data further supported writing proficiency as learners regularly reported feeling "less scared", "more willing to write" and "the urge to improve their writing better next time". These outcomes in both quantitative and qualitative directly addressed the research question, demonstrating that the use of Cambridge Write & Improve affirmed learners' motivation in English writing.

The notable improvement in learners' writing performance recorded a significant increase as reflected from pre-test to post-test. The upward progression from a lower grade to a higher grade represents the meaningful writing development in content, linguistic accuracy and overall ideas organisation. This progression aligns with Bandura's social cognitive theory that asserted mastery experience constitutes the most influential indicator of self-efficacy (Kleppang et al., 2023). These measurable improvements observed in the noticeable elevation of test scores revealed that learners have developed stronger beliefs in their ability to perform writing tasks competently. In addition, the results also indicated that Cambridge Write & Improve is a successful integration in writing tasks as the enhancement in writing performance is parallel with the increase in learner motivation. These findings are further reinforced by the interview data, as the learners are described to be feeling "proud", "less scared" and "more confident" after receiving feedback that were constructive and facilitated their writing performance. These insights proposed that improvements in writing ability and learners' cognitive readiness are interdependent and mutually reinforcing. This corresponds to research by Tao and Yu (2024) that claimed learner readiness contributes to enhancement of writing proficiency and development in higher cognitive ability.

Apart from that, self-efficacy emerged as a prominent outcome arose from learners' engagement with AI feedback in writing tasks. The questionnaire responses revealed an exceptionally high level of agreement that learners possess stronger beliefs in their ability to improve writing when supported by AI feedback. Learners' perception of the AI writing tool employed which is Cambridge Write & Improve also demonstrated positive outcomes. Learners repeatedly emphasized that the AI tool indeed provided feedback in the form of specific guidance and constructive comments to improve their writing greatly enhanced their confidence. Mohammed and Khalid (2025) asserted that personalized and tailored feedback generated from AI promoted learners' confidence and as a result fostering greater engagement in writing tasks. Aligned with Bandura's theory, the data indicated that specific, clear task guidance and supportive feedback significantly enhanced self-efficacy, especially when the feedback provided were timely and constructively. Young ESL learners are often hindered by low writing confidence (Yunus et al., 2021). Contrarily, Cambridge Write & Improve reduced these cognitive constraints by providing immediate and targeted feedback.

AI Feedback as a Catalyst for Engagement, Confidence, and Writing Persistence

A key finding from the study is that AI-generated feedback enhanced learner engagement with writing tasks and reduced anxiety thus fostered persistence in writing. Participants reported writing more frequently and felt

less anxious to start writing on their own. This finding highlighted that immediate feedback diminished the fear in making mistakes and other related challenges in ESL writing. This result is consistent with existing research that indicated AI feedback fostered a supportive and safe environment for learners to revise their writing, without having to be afraid of getting reprimanded (Wang, 2024). This is equivalent to the study which has shown that the immediacy of AI feedback reduced learner anxiety and facilitated self-regulation in writing (Sari & Han, 2024). These motivational benefits that were reported from the feedback provided by AI platform corresponded with Social Cognitive Theory that was emphasized by Teng (2024), when learners experience greater confidence, they are more likely to enhance persistence in completing the complex writing tasks.

Evidence from this study indicates that Cambridge Write & Improve encourages learners to foster independent and self-directed writing practices. High-autonomy scores were recorded from both the questionnaire and interview data highlighting that learners are capable of engaging in self-regulated revision and correction of writing based on the feedback received. Learners act as active agents in their own learning and regulate their learning process rather than solely awaiting instructions from instructors passively, validating the theoretical perspective of Social Cognitive Theory. This result addresses a persistent consent in the literature that AI tools impede autonomy and promote dependence on AI (Frenkenberg & Hochman, 2025). The results indicated that AI feedback that is implemented properly in learning instructions foster autonomy for learners to be in control of their tasks correction. This result aligns with current research, in which AI acts as a role in supporting and scaffolding self-regulated writing, emphasizing support provided to learners without substituting the teacher's role (Jin et al., 2023). The pedagogical contributions of this study can be further enhanced by incorporating structured AI-assisted tool and feedback designed which aligned to the teaching content followed by gradually guidance toward an independence use of Cambridge Write & Improve in writing tasks.

CONCLUSION

The findings of this study contribute compelling evidence of AI feedback through Cambridge Write & Improve significantly enhances young ESL learners' writing motivation thus improves in writing proficiency. The AI platform, Cambridge Write & Improve projected a positive outcome from the ESL learners. Most of the participants demonstrated measurable improvements in writing performance as observed in post-test. Applying the AI application in writing also enhanced learners' motivation especially in elevated self-efficacy, persistence, engagement and autonomy. A key contribution of this study is grounded in filling the notable research gap on how AI platforms and the feedback provided shape learners' motivation dynamic in enhancing writing coherence. The results demonstrated that AI-mediated feedback enhances the writing quality and strengthens learners' intrinsic motivation and promotes self-regulated learning, which is consistent with Social Cognitive Theory. Despite the promising outcomes, the study is constrained by several limitations. The intervention was relatively short, with a sole AI tool being implemented and only conducted within a single school which may restrict the generalizability of the findings. Future studies should adopt longitudinal designs across diverse school settings to provide stronger empirical data of AI feedback in contributing to motivation level and writing development. In conclusion, the study adopted Cambridge Write & Improve which contributed to enhancing writing motivation and offers a transformative instructional approach to the teaching and learning of ESL writing.

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