Improving Writing Skills of Non-Native English Undergraduates through Artificial Intelligence Tools: An Experimental Study

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ABSTRACT

Aim. The research focuses on the impact of Artificial Intelligence (AI) tools on the writing abilities of undergraduate students who are non-native speakers of English. The provision of teaching guidance and AI literacy are vital to the constructive, responsible, and ethical integration of AI tools in teaching the English language.

Methods. During a four-week period, Grammarly and ChatGPT were used as integrated instructional tools which incorporated a mixed-methods approach under a quasi-experimental framework. Twenty (20) students' part of the Department of English Language and Literature completed the pre and post writing intervention tasks that were analysed with a rubric which evaluated the writing for grammar, vocabulary, coherence and academic tone.

Results. The analysed data comprised descriptive statistics and paired-sample t-tests which also calculated the respective effect size as Cohen's dz. The findings indicated a statistically significant improvement across all writing tasks ($p < .001$) and the effect size measures suggest the improvement was large and substantive ($dz = 1.45–2.04$). The mean scores of the grammar and coherence constructs were the highest across the tasks, indicating that there was a positive change in AI feedback focused on instructional coherence and organization.

Conclusions. Both the focus group and the open-ended questionnaires which were analysed qualitatively generated data with explanatory power that was in parallel with the students' confidence, autonomy and awareness of errors was amplified. Although, over-dependence on the AI tools, feedback disconnects, and at times, wrong contextualisation had some reported gaps. The results imply that, with teacher mediation, AI tools can act as compatible additions to improving writing proficiency.

Keywords: Artificial Intelligence, Grammarly, ChatGPT, writing skills, mixed methods, non-native learners

Introduction

The integration of artificial intelligence in education has grown rapidly in the recent past and has proven to provide a solution for language teaching and writing skills. The act of writing particularly posed some difficulties that are special to non-native English-speaking students: syntactical, lexical, organisational and tonal. Such complexities are enhanced by restrictions related to the use of English in first and second language environments and the dual processes of acquiring a second language and content areas knowledge (Hyland, 2018).

Current AI tools like Grammarly, ProWritingAid, and ChatGPT use apply to such hitches respectively. These applications offer spelling and grammar check, which makes it easy for learners to correct mistakes in their written work as they write the work (Bikowski & Vithanage, 2016). In contrast to other forms of feedback,

AI tools allow learners to exercise independence and practice with feedback from their instructors rather than training solely through the judgment of others. Moreover, such tools contain several built-in machine learning options that can provide individual recommendations; the application of these tips can lead to the improved correctness and naturalness of texts (Zhai, 2021).

The contribution of AI in enhancing executable writing skills has been well articulated where teachers of language are rare. AI studies show that AI resources can help educators cut down on time spent on grading and, at the same time, allocate more time to offering standard feedback to students (Alam & Usama, 2023; Shadiev & Yang, 2020). Though, doubts still appear as to whether these tools may be limiting students' ability to develop essential language and creative thinking capabilities (Biber et al., 2021). Nonetheless, the accumulating studies evidence that when employed thoughtfully, AI applications can enhance conventional instructional paradigms enhancing students' confidence effectively in writing.

This research extends prior work by targeting one particular audience of learners, namely, non-native English speakers, and investigating how the use of AI technologies impacts their writing processes. Thus, it is the intention of the current research to help identify best practices in the integration of the use of AI in education to foster language acquisition by discussing the strengths and weaknesses of the tools (Alam, 2025a).

Foreign students writing academic English present widespread difficulties in constructing academically correct and coherent material with proper residual grammar and acceptable tone and vocabulary (Shams, Alam et al., 2025). Synchronous or asynchronous forms of instruction as well as feedback may not always be enough to address learners' needs since traditional approaches that are employed may not be enough in contexts where teachers or tutors are not adequately experienced in teaching any second language (Amir, Alam, Saudi et al., 2025). With the help of AI tools like Grammarly, ProWritingAid or ChatGPT, it might be possible to solve these problems by getting instant, individual, and flawless feedback. However, the evidence of how truly these tools to enhance writing skills, enable student learning and independent learning, and promote sustainable learning practices is still lacking. Additionally, scepticism resulting from over reliance on AI and its effect on students' critical thinking and creative writing skills demands further research into the use of AI in language learning (Shams, Ajmal et al., 2025). This study aims at filling these gaps by analysing the strengths, weaknesses, and educational application of AI tools in the practical improvement of writing abilities of non-native English students.

Research Questions

- How do AI tools impact the grammatical accuracy, coherence, and academic tone in the writings of non-native English-speaking students?

- To what extent do AI tools foster writing autonomy and confidence among non-native English-speaking students?
- What are the perceived limitations and challenges associated with the use of AI tools in improving the writing skills of non-native English-speaking students?

Literature Review

Ed tech incorporation of AI possesses potential for language learning especially for academic writing for non-native English-speaking students. Tools like Grammarly, ProWritingAid and the latest release ChatGPT are gradually being hailed for their ability to solve language difficulties and improve writing skills.

The Challenge of Writing for Non-Native English Students

Students who learn English as a second or foreign language, face challenges with grammar and syntactic, lexical, and cohesiveness challenges in academic writing. Specially, when the learner has had little contact with American or British English no to mention the cultural differences that may well influence the kinds of rhetorical organisation encountered (Hyland, 2018). Writing apprehension and just the amount of thinking needed to produce good grammatically accurate and stylistically correct texts slows progress down as well (Usama, Alam, Hameed et al., 2024). Therefore, timely and appropriate feedback is critical for those learners to achieve their goal.

AI in the Context of Writing Problems

Writing applications have also been found to give feedback about mistakes which enhances grammatical correctness and suitable language use among the students. Here, programmes like Grammarly, ProWritingAid help with providing recommendations of sentence formation, words, and style changes, which help in improving the texts. However, in practical terms, real-time text analysis and feedback enable PLE tools to enhance students' learning experience and more which supports independent learning and in writing skills, and students' ownership of the personal learning process (Shadiev & Yang, 2020).

AI-writing tools have also been thanked for the specific improvements including in areas of coherence and cohesion. With the use of AI-supported tools that address students in a collaborative way (Fakir et al., 2025), Dawn Bikowski and Ramya-darshanie Vithanage (2016) observed the enhancement of the organisational skills and of the logical discourse among learners. Likewise, Sohaib Alam et al., (2026)

indicated that great detail can be made about language use which is done by the machine learning algorithms so that appropriate changes to the texts are made with precision by the students.

Marzuki et al., (2023) found that in a study that the use of AI writing tools (like QuillBot, WordTune, Jenni, Chat-GPT, Paperpal, Copy.ai, and Essay Writer) have positively impacted the overall writing quality of students. Shireen Mostafa Ahmed Abdalkader (2022) found out the similar findings in a study by examining the effect of AI programmes such as Minecraft, Semantris, and virtual reality activities on improving English as a Foreign Language learners' writing fluency. Yifan Dong (2023); David James Woo et al. (2023); Amman Alammar and Eman Abdel-Raheem Amin (2023); and Mufida Syahnaz and Rahman Fithriani (2023) explored in their studies that AI can improve writing quality across various proficiency levels and help address digital access and literacy disparities.

AI and Learner Autonomy

Another advantage of AI tools is that such tools can help promote learners' autonomy to a great extent. Thus, constant availability of support for one's learning and lack of need to seek assistance from the instructors leads to type 2 self-regulation as described by Anam Shams, Alam et al. (2025). It is particularly useful in situations in which other resources are scarce, or tutors of high quality are not easily obtained. However, there is research evidence indicating powerful concerns on the use of AI may inhibit achievement of key language competencies as well as creativity (Biber, et al., 2021; Amir, Alam, Shams et al., 2025).

Existing literature emphasises the utilisation of AI tools in developing writing skills but scanty literature targets non- EML students. However, little research has been done about the future consequences of the utilisation of AI for the development of writing skills, and thinking capacity in general. This research aims at filling these gaps in two ways, by exploring the advantages and disadvantages of AI tools in developing the writing ability of the non-native English writers.

Research Methodology

The effectiveness of AI tools on the writing performance of non-native English undergraduate students in college was evaluated using a mixed-method quasi-experimental approach. The design employed a Convergent Parallel strategy where quantitative and qualitative components were collected and analysed simultaneously to ensure triangulation and validate findings. For the quantitative component, writing scores from the pre- and post- tests were analysed, while the qualitative section focused on students'

attitudes, experiences and challenges in writing via focus group discussion and surveys. The sample population consisted of twenty (N = 20) undergraduate university English language and literature students.

The sample size was limited to 10 participants per gender due to resource and time constraints. Despite the relatively small sample size, participants were carefully selected to ensure homogeneity and to meet the predefined inclusion criteria. Moreover, the required number of samples was ascertained through the G*Power statistical test. With a large effect size of 0.50, an alpha error probability of 0.05, a power of 0.8, and four predictors, the minimum sample size necessary is 20 respondents. Participants were recruited based on the following inclusion criteria age range from 19 to 23. Individuals with non-consent were excluded from the study. Participants were enrolled through purposive sampling and all respondents were undergraduate students. Eligible individuals were informed about the study objectives and procedures, and written informed consent was obtained prior to participation.

The sample consisted of 10 male and 10 female students aged between 19 to 23 years with various writing abilities but common weaknesses in grammar, vocabulary, coherence, and academic tone. The study was carried out in a smart classroom which ensured access to online AI tools such as Grammarly and ChatGPT. For a period of four weeks, during the scheduled writing sessions, learners partook in the intervention and received AI feedback (Akhter et al., 2025).

Two AI-based writing applications Grammarly and ChatGPT were employed as intervention tools. These were selected because they are free, user-friendly, and provide comprehensive feedback and comments on grammar, style, coherence, and vocabulary. Grammarly offered automated grammar, punctuation, and vocabulary correction, while ChatGPT provided interactive feedback on organisation, idea development, and tone adjustment.

Procedure

The experiment followed a four-stage process:

- *Stage 1 – Pre-Experiment Assessment.* On the first day, students composed a 300-word academic essay on a controlled topic without the aid of AI. Essays were evaluated using a confirmed analytic rubric focused on grammar, vocabulary, coherence, and academic tone (scored 0–5 for each element, total = 20).
- *Stage 2 – Orientation and Training.* Students were given an introductory session where the study purpose and ethical considerations were discussed. They also learned how to use Grammarly and ChatGPT in an appropriate manner.
- *Stage 3 – Intervention Activities.* During the four-week period, the students were assigned specific tasks every week geared towards the development of their skills in composition.
- *Week Focus Area AI Tool(s) Activity Description: 1*- Grammar and sentence structure Grammarly Students worked on their essays and participated in feedback discussions;

2 -Vocabulary enrichment Grammarly + ChatGPT employed both tools to examine synonyms and determine contextual usage of words; *3*- Coherence and organisation ChatGPT Composed short essays and edited paragraph order utilising AI to improve integration; *4* -Academic tone and style Grammarly + ChatGPT Focus was on the absence of 'conversational' elements and on retention of consistency in style.

- *Stage 4 – Post-Experiment Assessment.* In the last week, the participants returned to compose a 300- word essay on a closely associated subject. In this instance, AI was to be excluded. In order to assess progress made in each of the four areas of writing, the scores were assigned in relation to the pre- test.

Data Collection Instruments

The calculation of the difference between the scores from the pre and post-test essays, and the scores from the rubric detailed above, was completed. The essays were evaluated by two separate assessors. The reliability of the scores was measured by Cohen's Kappa, and was found to be =0.84, which indicates strongly favorable neutrality between the two assessors.

Qualitative Data was obtained from the focus group discussions and open-ended questionnaires; the former consisted of 10 items on perceived usefulness, autonomy, and challenges, and the latter consisted of 6-7 students per focus group. The discussions were recorded, transcribed verbatim, and the resulting text was subjected to thematic analysis.

Data Analysis Procedures

Quantitative Analysis

The evaluation of the data was performed utilising version 25 of SPSS. The computation of descriptive statistics (mean values and standard deviations) was followed by the application of paired-sample t-tests to assess the significance of the changes. These changes were measured through the pre- and post-tests. The Shapiro–Wilk test, used for and to confirm the assumption of normality of the data, ($p > 0.05$) included the calculation of paired sample t-tests. The effect size for each of the writing components was assessed using Cohen's d.

Qualitative Analysis

The leading qualitative method used was thematic analysis. The steps in this analysis were those presented by Braun and Clarke (2006) and included, in the following

order, familiarisation, coding, theme generation, review, definition, and reporting. The themes that emerged were those that described the usefulness of feedback, writing confidence, and the associated over-reliance.

Data Analysis and Results

As indicated in Section 4, the data analyses consisted of quantitative and qualitative analyses. For the quantitative portion, analyses were made of pre- to post-intervention changes for each of the four rubric components, including grammar, vocabulary, coherence, academic tone, and overall score, using descriptive statistics and paired-sample t-tests. To assess the extent of changes, calculated effect sizes for the paired comparisons were used using Cohen's dz ($dz = t / \sqrt{N}$). For the qualitative portion, the thematic analysis of the focus group discussions and the open-ended questionnaires was made, which served to explain and provide context to the quantitative results.

Table 1 presents a summary of descriptive statistics (pre- and post-intervention means and standard deviations, mean differences, paired t statistics, p-values, Cohen's dz) for each of the individual writing components as well as the total rubric score (N = 20).

Quantitative Results

Table 1

Pre- and Post-Intervention Means, SDs, Paired t Tests, and Cohen's dz (N = 20)

Writing component	Pre Mean (SD)	Post Mean (SD)	Mean difference (Post − Pre)	t	p	Cohen's dz
Grammar	2.8 (0.6)	4.1 (0.5)	+1.30	7.56	< .001	1.69
Vocabulary	3.0 (0.7)	4.0 (0.6)	+1.00	6.48	< .001	1.45
Coherence	2.7 (0.8)	4.2 (0.5)	+1.50	8.23	< .001	1.84
Academic tone	2.5 (0.7)	3.8 (0.6)	+1.30	7.89	< .001	1.76
Overall score (out of 20)	11.0 (2.0)	16.1 (1.5)	+5.10	9.12	< .001	2.04

Source. Own research

Table 1 shows the mean scores pre- and post-intervention, the standard deviations, the results of the t-test, and the effect sizes (Cohen's dz) of the various writing components and the overall rubric score. After the four-week AI-assisted intervention, students' writing across all components showed undeniably robust positive movement.

Concerning the grammar scores, the pre-test mean of 2.8 and post-test mean of 4.1 correspond to a mean difference of +1.30 ($t = 7.56$; $p < .001$; $dz = 1.69$). The large

effect size difference shows positive movement with respect to the use of Grammarly, which confirms the value of students' grammatical accuracy and appreciation of syntactic structures gained with the intervention.

With respect to vocabulary, the mean scores shifted from 3.0 to 4.0 for a gain of +1.00 (dz = 1.45). Exposure to AI-generated suggestions and feedback indicates growth in students' lexical choice and precision.

The greatest improvement in coherence saw scores shift from 2.7 to 4.2, (+1.50) resulting in a very repetitive impact (dz = 1.84). The interaction with ChatGPT vastly positively changed students' organisational flow, made transitions between paragraphs and overall flow of the writing smoother.

The results for the academic tone also improved considerably, increasing from 2.5 to 3.8 (+1.3). This change was also classified as large (dz =1.76). This suggests that the use of AI feedback helped the students preserve the formality and objectivity required for the academic context.

For the final assessment, the overall writing score also improved significantly from 11.0 to 16.1 out of 20, reflecting an average gain of +5.10 points ($t = 9.12$, $p < .001$, $dz = 2.04$). The very large effect size shows that the AI-integrated intervention brought about statistically significant and educationally meaningful changes to the overall writing proficiency of the students.

These findings, taken together, confirm that the use of AI tools, and particularly Grammarly and ChatGPT, positively improved the quality of students' writing. The improvements seen in all four components of the assessment show the value of using AI-assisted feedback in teaching essential academic writing skills to non-native English learners.

Assumption Checks and Statistical Notes

Before conducting the paired t-tests, the assumptions were checked for the analyses. Normality for the difference scores was checked via the Shapiro Wilk test and through graphical analysis. For the difference scores of the outcomes assessed, there were no significant deviations from normality, which justified the use of parametric paired t-tests. Potential outliers were also assessed, and where they did exist, they were assessed for influence, which was found not to change the main conclusions.

Magnitude and Educational Relevance of Change

Each rubric component reflected significant gains from the intervention. For instance, on the grammar component, there was an improvement of +1.30 points on the 0–5 scale (nearly 46% of the baseline mean) and coherence increased by +1.50 points, which was the highest absolute increase. During these four weeks, the increase of +5.10 points

(11.0 to 16.1 out of 20) on the overall rubric score represents a large and educationally meaningful improvement.

Qualitative Findings (Thematic Summary)

The thematic analysis of the focus group transcripts and questionnaire answers highlighted four key themes which contextualised the quantitative gains:

- Improved error detection and self-correction. Students said Grammarly highlighted errors and provided explanations that aided in learning and self-correction. Illustrative quotation: "It showed me my grammatical errors; sometimes, it also explained why they were wrong."
- Enhanced organisation and coherence. Participants described using ChatGPT to create outlines and improve transitions, which they credited as pivotal to the coherence of their writing. Illustrative quotation: "Applying the knowledge from ChatGPT also made me realise how to structure ideas in essays."
- Enhanced confidence and autonomy. Learners described reduced anxiety and a greater willingness to independently revise drafts after receiving AI-generated feedback. Illustrative quotation: "This was a useful assignment; I hope to use these tools for other tasks."
- Over-reliance and inaccuracy. Several Students noted that AI suggestions were sometimes contextually irrelevant and excessive reliance on empirical automated feedback could be counterproductive. Illustrative quotation: "Sometimes the suggestions were not perfect; I still had to check them."

Triangulation and Interpretation

The qualitative themes corroborate and elucidate the quantitative findings. The most sizeable quantitative gain in coherence with participants' narratives of ChatGPT's usefulness in organising ideas and transitions. Likewise, the substantial gains in grammar aligned with students' accounts of Grammarly's role in clarifying particular grammar errors and providing corrective explanations. Reports of occasional inaccuracies of task AI and concerns of over-reliance AI users balance the findings and indicate the necessity of mediated instruction, with emphasis on contextual appropriateness, critical analysis, and evaluation of AI generated feedback (Alam, 2025b).

Recommended Robustness Checks and Additional Analyses

In order to strengthen the evidential base, the following supplementary analyses are recommended and possible to perform with the provided raw score data: (a) report

Shapiro–Wilk test statistics and 95% confidence intervals for mean differences; (b) perform sensitivity analyses using nonparametric Wilcoxon signed-rank tests assuming at least one normality assumption is violation; (c) examine scores at the rater level to ensure inter-rater consistency on the pre- and post-assessments; and (d) explore correlations between change scores and participant background variables, such as baseline proficiency and prior exposure to AI tools.

Discussion

The purpose of the present research was to also establish the effectiveness of the intervention by implementing AI tools in writing ability enhancement of non-native English-speaking undergraduate students over a four-week period. By distilling the findings from both the quantitative and qualitative studies, some understanding of that circa $ 5 billion market can be gained, together with the potential for and challenges of using AI tools in academic writing pedagogy. The intervention induced statistically significant improvements across all components of writing grammar, vocabulary, coherence, and academic tone meaning also large effect sizes. Qualitative factors elucidating mechanisms of change (error awareness, reorganisation) and possible dangers (over-reliance, inaccuracy) provided clarifying depth.

The pre and post-experiment assessments demonstrated statistically significant improvements across all four components of writing: general organisation, lexical resemblance, cohesion and formality. Such an overall score rise of 5.1 proves the effectiveness of AI tools in the process of increasing the students' level of writing.

Grammar and Vocabulary: AI tools including grammar checkers such as Grammarly were useful in preventing the students from making grammar mistakes, and in the same process assisted in building the student's vocabulary by providing contextual suggestions (Alam, 2025c). These conclusions dovetail with prior research that proves that feedback based on artificial intelligence improves the language correctness and the range of vocabulary used.

Coherence and Academic Tone: ChatGPT for example offered structure to the students and provided relevant examples while formatting student's essays in a professionally sound and more logically inclined manner. Such enhancements endorse research analysing that intelligent technologies help in enhancing greater organisational and stylistic practices.

Four main thematic areas were noted which are improved error acknowledgement, better organisation of ideas and boosted confidence. Smart technologies were helpful to students when it came to feedback, as students like to see the result of the rule immediately. Yet, some of the students complained of the excessive use of these features and rarely erroneous vocabulary recommendations.

This paper has several implications for teaching writing as illuminated in the subsequent sections. That was the primary role of the tools, but it essentially required AI to play a backup or supplementary role to what has been learned.

Thus, the results signify the possible use of the AI tools as an addition to the traditional writing assignments. One to one and instant feedback that these tools provide assist the student in identifying and correcting their mistakes on their own. This is bound to the constructivist leaning theories of learning that promote activity and learner centered learning.

Automation vs Human Intervention

While the findings confirm the effectiveness of the AI tools used the analysed results indicate the importance of moderate AI implementation. Teachers should help learners to understand the need to examine AI comments for correctness of generalisation in relation to context. Such an approach can reduce those risks and contribute towards the overall development in a field that has been considered over-reliant.

Potential for Scalability

This small case study illustrates the proposed applicability of AI tools, therefore, within broader larger-scaled educational contexts may prove to be effective especially within institutions that have fewer resources, or for any institutions where one-on-one feedback may be difficult to provide.

Challenges and Limitations

However, some of the issues that emerged from the study include; firstly, students' initial inability to recognise the tools as artificial intelligence; and secondly, the limitation of the feedback they occasionally give as being sometimes inaccurate. Furthermore, on account of shortness of the experiment, the extent to which writing proficiency may have been affected in the long run cannot be ascertained (Alam et al., 2022). Future research should consider the following limitations: The present study was conducted in cross-sectional, qualitative only and should be supplemented with longitudinal research in the future.

The study thus supports the proposition that the use of AI writing tools enhances the writing ability of students with poor English composition regardless of their origins, in areas such as grammar, vocabulary usage, coherence with sources and adherence to an academic writing style. Within the context of instruction of academic writing,

these tools can improve the learning process in addition to increasing client utility and compensating for the limitations of traditional feedback. However, as their application has demonstrated, their effective use presupposes possible risks to be taken into account, and their use should not be substitutive of the teacher's directions.

Recommendations

Based on the findings from this study, the following recommendations are made for educators, policymakers and future researchers to maximise the potential of AI tools in improving writing skills for non-native English-speaking students:

- Language tools like Grammarly, Hemingway Editor, and ChatGPT, should be assumed by educators as additional aids in writing lessons. Some of them can feed back students' papers immediately or within a few minutes and point out such minutiae as possible grammatical mistakes, the choice of vocabulary, coherence and academic tone, which enhances traditional method of teaching (Alam, 2024).
- Students would need some guidelines on how to properly approach the use of AI, and which type of task should be given to AI tools at some point, and which type of task should be solved by students themselves to get the maximal effect from the utilisation of the presented AI resources (Alam et al., 2025). Minor seminars or one or two lesson classes on AI explanations on propositions that can be inferred will go a long way in ensuring that the students do not blindly trust the algorithms.
- AI tools should be conceived as reinforcement tools rather than complements of human feedback. Teacher must still give form and context feedback so that students can learn throughout different or particular difficulties, particularly the difficult writing tasks (Beg et al., 2025). Probably the most effective approach would be when AI-generated feedback is combined with the teacher feedback.
- However, it has to be combined with the monitoring of the student progress after the implementation of the AI tools in order to check if the students are being helped in the long run. Teachers should monitor their students' writing from time to time to identify the zones in which AI can fail (for example, advising to the use of incorrect vocabulary or explanation of grammar rules in an unclear manner). If these limits are overcome, then educators can improve the utilisation of the mentioned artificial intelligence tools, and, in this way, advance the results of students' learning even more.
- The use of AI tools helps enhance autonomous learning as the students are forced to self-correct and consider their written work. The teachers should recommend the students to apply the above procedures when they are out of classroom so that the students can polish their writing on their own hence enhancing the culture of learning on their own.
- AI will play important roles in the development of language learning in the future So, there is more need to conduct future research about the long-term implications of implementing and applying AI tools in the teaching and learning of languages. The long-term studies

could shed the light on how permanent is the writing skills enhancement and what reflection AI tools tend to make on students' results in general (Usama, Alam, Tarai et al., 2024). Further, the authors propose that more information is required regarding how the tools may be modified for use by various linguistic and cultural communities.

- To this end, institutions should explore ways of being able to make these tools easily available for students through free or affordable access especially within institutions within the developing world. Government and legislation should not depend on educational advancements made with AI only, but incorporate these innovations as the general framework of the educational sector that is more and more available for all students, including in lower income ones (Alam, Ahmad et al., 2026).
- Also, integrating the use of peer review with the AI instruments can also help in improving studentship skills in writing. Students can write their drafts and then later ask AI to enhance them, and then they can swap with classmates for more comments. Another is that through this form of collaboration they would get to learn from a variety of lenses as well as further improving their writing.
- With AI tools improving in the future, curriculum developers must ensure that digital literacy and critical thinking skills are included in the curriculum. Students should be informed not only how to work with such tools, but also be encouraged to think critically about the educational value of this breakthrough, its advantages and/or disadvantages ethically, practically, and academically. In the case when a critical mindset is developed, students are to become more informed consumers of the AI technologies used in their academic activities.

Conclusions

The purpose of this research was to examine the effects of the launched AI tools on the enhancement of the linguistic performance of non-native English under graduates over a period of four-week experimental intervention. The research presented here supports the assumption that the application of AI-based solutions positively influences different aspects of written language, such as mechanical accuracy, lexical and syntactic density, cohesion, and academic style.

The quantitative data confirmed significant increases in writing performance as the students said that AI instruments such as Grammarly and ChatGPT help them to deal with issues that non-native language speakers experience. These tools not only responded with meaningful feedback but also encouraged students participating in knowledge construction so that they could look into the results of their own mistakes.

The interview data also reinforced the kind views that the students had about AI tools. A survey of the beneficial themes can be joined with ideas like the increase in confidence, better organisation of ideas, the presence of the efficient methods of error correction as bearing testimony to the idea of AI integration in the field of writing. However, the questions whether learners should depend on those tools too much

and whether these tools work perfectly sometimes require critical evaluation and direction from the teachers.

This study highlights the necessity of supporting the basic traditional instructional tools and strategies in RWPA as AI applications in writing, particularly in the low-resource conditions. When implemented optimally, these technologies supplement curriculum gaps in feedback systems and to support non-native English learning communities.

All in all, the study met its aim but due to the short developmental timeline and small sample size, additional research is needed to determine the effectiveness of long-term and AI-writing interventions at scale. Further research should also be conducted about related forms of AI applications in different languages and considering, the role they play in language acquisition.

Thus, it can be concluded that AI tools are a worthy addition to the writing instruction practice that can transform existing problems in language acquisition into opportunities more effectively. When correctly integrated, these tools may help students know the areas of weakness, and work on them to improve their proficiency and confidence in their academic writing to the improvement of their learning.

Limitations

The insights provided by the design are valuable; however, the four-week period during which the study was conducted and the small sample size are both significant limitations. As a result, the findings that were returned should be used with caution, and the lack of generalisability to a wider population should be noted. To confirm the findings, future research should focus on longer interventions, a longitudinal design, and greater sample sizes.

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