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The Impact of Artificial Intelligence Writing Tools on Learners' Motivation in English Writing: A Systematic Review

Jun Hong Lim^{ID}, Melor Md Yunus^{ID} and Wei Lun Wong*^{ID}
Faculty of Education, Universiti Kebangsaan Malaysia,
Selangor, Malaysia

Abstract. The integration of Artificial Intelligence (AI) into writing pedagogy enhances learner motivation in English language acquisition. A gap remained in the literature of consolidated evidence addressing the influence of AI writing tools on learners' motivation in English writing, particularly between intrinsic and extrinsic motivation which may contribute to sustained, long-term motivational effects. This systematic review investigates the reported impacts of AI writing tools on learners' motivation in English writing. The review consolidated results from 14 empirical studies published between 2021 and 2025 accessed through the Scopus database. The selection of studies in this review was clearly governed by the inclusion and exclusion criteria, in accordance with PRISMA procedure to determine the most pertinent papers for this review. The reviewed studies spanned various educational contexts across Malaysia, Jordan, China, Oman, Iraq and the United Arab Emirates. A range of AI writing tools were examined, including ChatGPT, Grammarly, Automated Writing Evaluation (AWE) systems and other generative AI applications. Findings revealed five recurrent themes of motivational impacts: increased confidence and self-efficacy, higher engagement and interest, improved feedback and support, enhanced autonomy and reduced writing anxiety. These findings indicated that AI writing tools exert potential to enhance learners' writing proficiency and foster sustained motivation in self-directed learning. The reviewed studies revealed that AI has progressed and emerged as a pedagogical catalyst that shapes modern writing pedagogy. Future research should focus on longitudinal and ethically grounded approaches to better examine the sustained motivational impacts and ensure equitable integration of AI-assisted writing in English language education.

Keywords: Artificial Intelligence; ESL writing; Learner motivation; Systematic review; Writing proficiency

*Corresponding author: Wei Lun Wong; colinw@ukm.edu.my

1. Introduction

The use of Artificial Intelligence (AI) in education has grown rapidly and has an increase of popularity due to its personalized contents delivered and individualised information imparted to users. In recent years, Pektas et al. (2025) demonstrated that AI supports differentiated instruction in the learning process. These features of AI have made it possible to be adopted in educational settings which have an immense student population especially when it is situated with a circumstance of limited resources.

AI possesses the potential to improve learner engagement and customise learning mechanisms to cater to the needs of each individual student (Almusaed et al., 2023). Writing has been recognised as one of the most difficult and complex skills in the language acquisition process, particularly for English as a second language (ESL) student (Seyyedrezaei et al., 2024). In light of this, writing skills need to be substantially focused to combine language awareness, lexical complexity, coherence and grammatical accuracy.

Numerous aspects of language anxiety, minimal immediate feedback received and limited exposure to writing styles result in the difficulties in writing among the English language learners. It has been extensively identified that motivation plays an important role in writing performance, thus impacting the willingness of learners to write and be persistent in addressing the challenges they faced. Motivation and the drives to write during the conduct of composing are complex as it constitutes both extrinsic and intrinsic elements (Alzubi & Nazim, 2024).

Learners are more inclined to engage in metacognitive techniques while reviewing their writing pieces or even explore more resources to assist them in writing, predominantly when they are highly motivated (Nasr, 2024). However, the habits of avoidance when assigned with writing tasks and the stagnant progress faced while writing often arose from low motivation, which could result in repeated failure in writing.

Emerging AI writing tools established to assist students in the writing process were evidently a result of technology advancements. The functions of AI writing tools such as the real-time grammar checker, spelling corrections, coherence structure and content development were conveniently obtainable from tools like Grammarly, ParagraphAI, ChatGPT, Google Gemini, DeepSeek and CoPilot. These tools promote autonomous learning and apparently assist learners in improving their mechanics of writing. These AI writing tools serve as a scaffold which implicitly lessens learners' cognitive load and enable learners to practice English writing in a low-pressure environment where they can write according to their own pace.

The aforementioned tools have the potential to impact affective and motivational outcomes as obtaining immediate feedback helps students to feel more accomplished thus less anxious when writing. Consequently, students gain confidence which is essential for them to maintain motivation when writing (Bai & Guo, 2021). In addition, AI technologies foster self-efficacy which is a critical

factor in determining motivation which will directly bring an impact towards academic performance.

The literature on the motivational effects of AI writing tools still persists in a fragmented state and are limited in a ununified structure despite the fact that these tools are becoming widely available in classrooms. Yin et al. (2024) asserted that current research offers limited insights into the motivational impacts of ChatBots on individual learning differences and psychosocial aspects within writing instruction. Research to date has inadequately explored and remained a gap in the affective elements like motivation and learner engagement, in fact the linguistic outcomes in writing were advocated in the studies (Mohammadi Zenouzagh et al., 2023).

In response to this gap of relevant literature, it appears challenging for educators to decide the adequacy of integrating these new technologies into the teaching of writing. Given the lack of research, a thorough evaluation of the current research is thus required to delve into the understanding of how AI tools could be utilised and the relevant results yield towards the enhancement of writing skills.

This systematic review concentrates on empirical studies from 2021 to 2025 to offer an updated overview of evolving generative AI, providing synthesis that emphasized on learners' motivational outcomes in English writing. This review aimed to close a significant research gap by investigating the impacts of AI on students' motivation in English writing. This review extended on existing systematic review contributing to a more comprehensive understanding on the outcomes of motivation particularly in English writing (Na et al., 2024). Hence, this systematic literature review fulfilled the purpose in answering the following research question:

- 1) What are the reported impacts of generative and evaluative AI writing tools on learners' motivation in English writing?

2. Literature Review

2.1 Evolution of AI in ESL Writing Skills

In the preceding years, AI writing tools have evolved and progressed significantly, extending beyond static grammar checkers to interactive multifunctional platforms that are capable of creating, assessing as well as improving written texts (Zhang et al., 2025). Applications developed grounded in artificial intelligence are practical mechanisms in current practice particularly in ESL writing classes as it provides beneficial components in subject relevancy.

Mohebbi (2025) reviewed 18 articles between 2009 and 2024, asserted that writing is effectively transformed into a dynamic and interactive learning as the AI tools provide real-time corrections and suggestions on the grammar, lexical as well as writing cohesion. Analysis conducted by Zhao (2025) identified that AI tools indeed enhance writing proficiency through correction and improvements in language precision, usage of vocabulary including language enhancement.

Commencing from a theoretical concept, artificial intelligence has established into an intervening variable that redefines the instructional techniques, methods of teaching and student involvement (Zhang, et al., 2023). The rapid development of artificial intelligence has significantly transformed our life into an elevated way of living and how we work (Shao, et al., 2022). In the current context, AI tools are adopted to generate an array of written works such as compositions, reports, and articles autonomously by responsively detecting the relevance of the topic thus generating extensive results (Kamalov et al., 2023).

Krause et al. (2025) has reported that the revolution in education facilitate accessibility for the students from the underprivileged and secluded populations. ESL learners who employed AI-enhanced tools in their learning witnessed substantial increases in writing fluency thus support learners to attain deeper language competency. Studies conducted by Song and Song (2023) reported that AI tools like ChatGPT facilitated in writing assistance for enhancement in vocabulary and proposals of alternative formulations onto the sentence structure strengthened language competence.

2.2 Motivation and Self-Efficacy in AI Supported Writing

Motivation is a contributing factor in determining the success rate of students in learning a non-native language (He, 2024). According to Huang et al. (2023), a profound recognition of learning motivation has the capacity to encourage the students to be actively involved in the learning process. Based on the findings of these researchers, the AI powered system implemented in their studies offered individualised facilitation throughout the whole learning process thus resulting in the increase in students' willingness to devote themselves to learning.

From the view of Yang et al. (2025), the motivation drive in writing often has a significant impact on the extent of authenticity and sophistication of students' writing performance. In fact, motivation drive that students possess are crucial when they are in the initial stage to start writing. Chang and Sun (2024) reviewed papers between 2000 to 2022 highlighted that AI indeed supported writing and had cognitive and motivational impact as it fosters intrinsic motivation, self-regulation and autonomy among the learners.

The effectiveness of writing in any curriculum delivery is largely dependent on intrinsic motivation and self-efficacy (Dewi et al., 2025). Students may enhance their abilities in learning and demonstrate active engagement in meaningful practices of knowledge when they are writing in an environment that is accessible to AI (Engeness & Gamlem, 2025). Studies by Song and Song (2023) discovered that motivation among students and self-directed learning has the potential to be refined by AI assisted learning. AI writing tools have the potential to reduce anxiety among learners and foster a stronger sense of confidence to empower the writing process.

As a result, students are more inclined to self-regulate their writing tasks. The view from Wei (2023) also shed light on the extensive and diverse impacts drawn from AI-assisted tools have on a variety of abilities in language learning. It was also highlighted that in addition to improving students' writing skills, these technologies also have the potential to boost motivation to result in active participation during the process of language learning.

2.3 Pedagogical Integration of AI Writing Tools

The practical application of AI writing tools is predominantly predicated on the teaching instructions and dependable on any circumstances that could arise during instructional practice in the classroom. Learners are assisted significantly more when approaches that consist of teacher mediated instruction, organised classroom activities and scaffolding were employed into a supportive environment.

Alharbi (2023) reviewed a total of 104 papers from Scopus database and identified that the implementation and promotion of AI-powered writing aids should be implemented with care and taken into account of the particular contexts that are aligned with the instructional practices. Almuhanna (2025) recommended that if AI tools were to be incorporated into the classroom, teachers could guide the students to create a customised list that emphasises on the identified vocabulary or patterns they come across when using the AI writing aids. By actively selecting and organising these aspects of linguistics, it certainly helps students to take charge of their learning thus increasing awareness of language usage in writing.

In a review study of 39 empirical papers published between 2010 and 2023 conducted by Ding and Zou (2024), data indicated that when writing process was broken into easier feasible components, the generative AI could be a helpful tool in assisting students to tackle the writing and students could gradually improve their writing abilities. Ding et al. (2024) also found out that students' creativity were increased and their obstacles in starting to write were overcome when they used GenAI tools to generate ideas into draft before they commenced writing.

Song et al. (2023) highlighted that effective strategies must be integrated with learning tools so that it will have a sustained influence on students' learning fulfillment to guarantee that they will master the new knowledge and skills that are necessary to be applied in writing. Therefore, this type of AI support, when it is adopted in a suitable manner, can significantly improve students' writing development and attain thorough understanding on the good writing techniques (Fathi & Rahimi, 2024).

3. Methodology

The conduct of this systematic review adhered closely to the criteria of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA). The compliance of PRISMA contributed to the feasibility of conducting this thorough and organised review process which would improve the validity and reliability of the findings. The principal focus of this review was to examine and assemble the empirical data available in recent studies on the impact on how

Artificial Intelligence writing tools could affect students' motivation, especially in relation to English writing. The review process was segmented into sequential steps in order to methodically assess the pertinent research; the steps were: identifying sources, screening the publications according to the inclusion and exclusion criteria and finally include the eligible studies into the analysis in this review paper. After the relevant articles were included in the review, a structured data analysis procedure was executed. The process of identification of studies via database was presented in Figure 1.

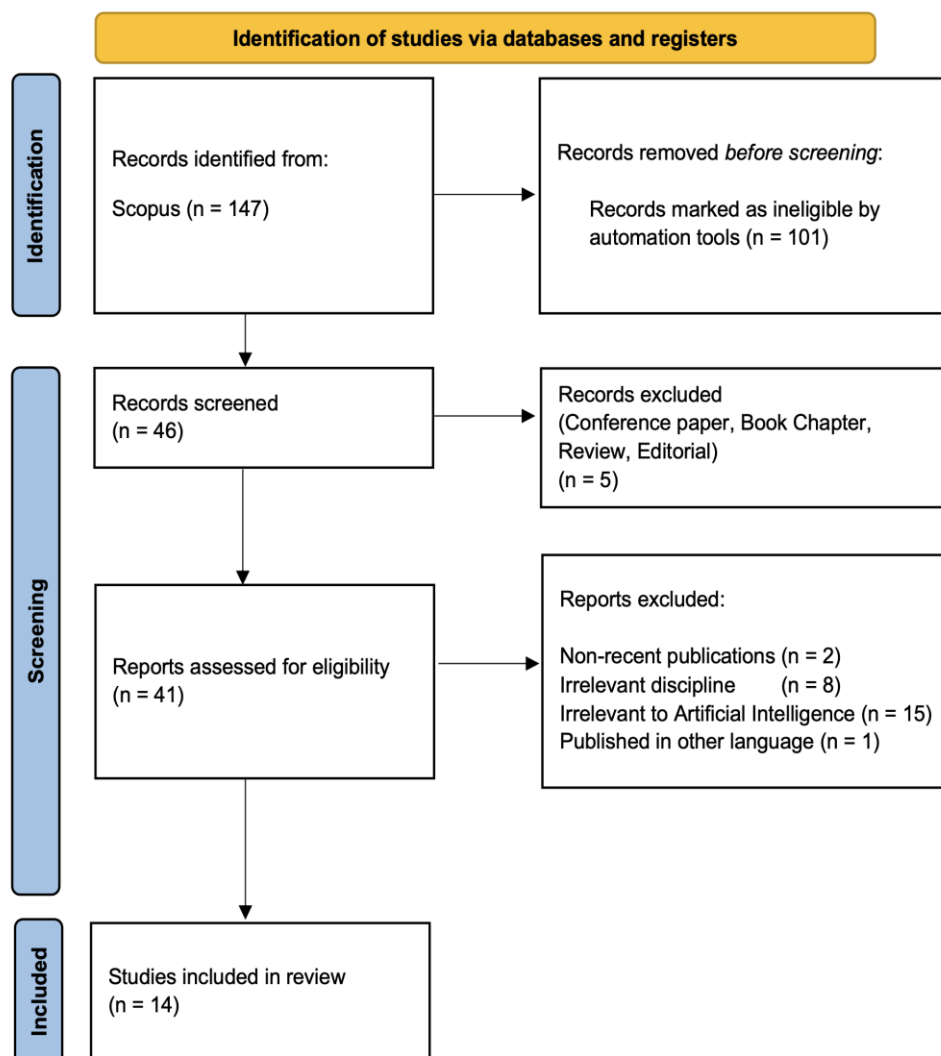


Figure 1: Flow chart of the research article selection process

3.1 Identification Phase

Google Scholar was the first search engine employed in the identification phase with the aim of obtaining a general overview of the scholarly literature that was available pertinent to the topic. The keywords that were chosen to be input into the search engine were ["artificial intelligence" AND "writing" AND "motivation"]. The search results comprised 433,000 of academic publications, demonstrating a broad interest in this topic and a comprehensive inclusion of

coverage across varied fields of academic. A specified range of filters was then applied to narrow the articles retrieval into a restricted search to only retrieving publications from the year 2021 to 2025. Subsequent to this revision of the search filter, the results of the publications found were only 66,900. An initial exploratory mapping of literature and identification of pertinent keywords were conducted using Google Scholar. However, to affirm the credibility and relevance of this research, a decision was made to refine the search by transitioning to only include papers indexed in the Scopus database to ensure data reliability and academic rigor.

A retrieval command maintaining the same keywords and time frame was replicated on Scopus search engine, hence resulted in 147 publications being identified. Among the 147 records identified in Scopus, 101 were removed by automation tools. The searches were conducted in May 2025 and were limited to journal articles within the subject area of Social Sciences in Scopus to focus on peer-reviewed papers and maintain consistency in the selection of papers for this review study. The search strings used for retrieving papers in the Scopus database were presented in Table 1.

Table 1: Search strings used for retrieving papers

Database	Search string
Scopus	TITLE-ABS-KEY (("artificial intelligence" AND "writing" AND "motivation" AND "english")).

3.2 Screening Phase

Based on the predetermined inclusion and exclusion criteria, a thorough screening procedure was executed to determine the most pertinent papers for the review. The screening of the studies was conducted using Scopus' selection checkboxes to apply the predefined inclusion and exclusion criteria which contributed to the final set of articles for review. The remaining 46 records were screened resulted in exclusion of 5 conference papers, book chapters, reviews and editorials. Records assessed for eligibility on the 41 papers resulted in 26 exclusions due to non-recent publication (n = 2), irrelevant discipline (n = 8), lack of relevance to AI (n = 15), or non-English language (n = 1). The papers that were inaccessible, irrelevant from the scope were eliminated in the process of screening. Eventually, a total of 14 articles which met all the inclusion criteria were recognised as suitable for this systematic review.

Table 2: Inclusion and exclusion criteria for articles screening

Criterion	Inclusion	Exclusion
Publication Type	Peer-reviewed journal articles	Conference papers, book chapters, review articles, reports
Publication Year	Published between 2021 and 2025	Published before 2021
Language	English	Non-English languages
Keywords	Include artificial intelligence, writing and motivation	Unrelated keywords such as human, curricula, or educational technology
Access Type	Open access	Limited or restricted access

3.3 Included

The final 14 articles that were shortlisted for the review possessed empirical evidence to demonstrate the employment of AI writing tools and their impact on learners' motivation in English writing. A diverse subject and areas that were worthwhile to be investigated were addressed in these articles. The 14 chosen papers had undergone a rigorous process to examine the methodological quality of the papers and its relevance to the research question. The qualitative appraisal of all included studies was conducted manually with the predetermined criteria on the appropriateness of study design, characteristics of sample, data collection, analysis and the relevance of the reported outcomes pertinent to learner motivation.

4. Results

4.1 Overview of the Included Studies

The studies that were included in this systematic review encompassed a broad range of contexts and methodologies and AI writing tools used in enhancing the English writing instructions. As indicated in Table 3, the 14 articles extended across various countries comprising Malaysia, Jordan, China, Oman, Iraq and the United Arab Emirates reflecting the escalating global interest for the integration of AI into English language education.

The research participants engaged in these review studies presented a well-rounded perspective of both educators and learners as the samples range from secondary school students to tertiary-level students as well as experienced educators in the field. The investigation of AI contribution in education was exemplified through multiple research designs. Mixed-method designs were most common (6 studies), followed by four qualitative designs, three quasi-experimental designs, onecase study and one bibliometric analysis.

A few of the traditional and generative AI applications were employed as tools in the studies that comprised of Grammarly, ChatGPT, Turnitin and Automated

Writing Evaluation (AWE). This demonstration of tools employed in the studies enhanced the evaluation of its impacts towards writing instructions when they were being applied in a variety of pedagogical contexts. Evidence conducted in China, Jordan, Iran, Hong Kong and Iraq highlighted the benefits that these tools have significantly support students in enhancing writing accuracy, individualised feedback and fostering independent learning among learners (Alsariera & Alsarairah, 2024; Biju et al., 2024; Chan et al., 2024; Mohammed & Khalid, 2025; Wang et al., 2023).

Quantitative and mixed-method studies were conducted in China and Saudi Arabia reported that students have provided positive responses to the language learning platforms which offer AI-generated feedback. This led to measurable improvements in both motivation and academic performance (Kanwal, 2025; Song & Song, 2023; Wei, 2023). In addition, a bibliometric analysis conducted in China underscored the rising scholarly attention on the role of AI technologies like QuillBot, Grammarly and ChatGPT in language education (Zhang & Umeanowai, 2025). Collectively, these studies illustrate that AI tools are transforming instructional practices to provide learners with flexible and readily accessible support for students to facilitate their progress of language learning. The results tabulated in Table 3 exhibited a prevailing pattern that reflects the current practices of the tool implementation that could be associated with students' writing skills and it will be explored in the ensuing section.

Table 3: Summary of included studies

Authors	Year	Country	Participants	AI Tool Used	Research Design
Al-Smadi, O. A., Rashid, R. A., Saad, H., Zrekat, Y. H., Abdullah Kamal, S. S. L., & Uktamovich, G. I.	2024	Malaysia	18 English language teachers	General AI-powered tools	Qualitative design
Alsariera, A. H., & Alsarairah, M. Y.	2024	Jordan	150 fourth-year Jordanian EFL undergraduate and 8 experienced EFL writing instructors	Grammarly, Turnitin, ETS Criterion	Mixed method
Biju, N., et al.	2024	Iran	70 EFL learners	ChatGPT	Mixed method
Chan, S. T. S., Lo, N. P. K., & Wong, A. M. H.	2024	Hong Kong	918 University Students	GPT-3.5	Mixed method

He, Y.	2024	China	86 intermediate EFL students from Ningbo University	Automated Writing Evaluation (AWE)	Quasi-experimental design
Hysaj, A., Dean, B. A., & Freeman, M.	2025	United Arab Emirates and Australia	24 multicultural undergraduate students	Generative Artificial Intelligence (GenAI) Tools	Qualitative design
Jose, J., & Jose, B. J.	2024	Oman	35 educators from University of Technology and Applied Sciences, Al Mussanah.	Chatbots, Language Learning Tools, Research Tools	Qualitative design
Kanwal, A.	2025	Saudi Arabia	142 undergraduates	ChatGPT	Quantitative design
Mohammed, S. J., & Khalid, M. W.	2025	Iraq	322 EFL learners	AI-Generated Feedback Tools	Mixed method
Slimi, Z., Al Alawai, F., Al Alyani, H., Al Abri, S., Al-Farsi, F. A., & Al Balushi, K.	2022	Oman	100 foundation ESL students	No specific AI tool	Case Study
Song, C., & Song, Y.	2023	China	50 Chinese undergraduate EFL students	ChatGPT	Mixed method
Wang, Y., Luo, X., Liu, C.-C., Tu, Y.-F., & Wang, N.	2022	China	76 college students	Automatic Writing Evaluation (AWE)	Quasi-Experimental Design
Wei, L.	2023	China	60 EFL undergraduates	Duolingo	Mixed Method
Zhang, X., & Umeanowai, K. O.	2025	China	Bibliometric Study	ChatGPT Grammarly Quillbot	Bibliometric Analysis

The findings were summarized by the AI tools employed in the review studies to align with the on-learner motivation and its role in shaping the motivational effects. There was an array of AI Writing tools employed in the selected studies which highlights the accelerated evolution of technology in education especially in writing components. ChatGPT and the other related GPT models were reported as the most commonly used tools in writing instructions, as it was evident in 5 out of the 14 articles reviewed. This was clearly illustrated in both Table 4 and Figure 2. This observation drew attention to the supportive features of generative AI that could support students' learning progress.

Three of the studies were found employing Automated Writing Evaluation (AWE) softwares such as Turnitin and ETS Criterion which had showcased their effectiveness in the correction of structures and linguistic accuracy (Al-Smadi et al., 2024; Hysaj et al., 2025; Jose & Jose, 2024). Correspondingly, three other studies were identified to be using AI -powered tools for grammar correction and paraphrasing like Grammarly and QuillBot to support the consistency of language and lexical improvements. Research that uses chatbots and language learning tools were recorded less likely to be used as tools for writing instruction. It is apparent that the technology enhanced tools are now transitioning into more dynamic resources that could really enhance learning.

Table 4: Frequency of AI Writing Tools used in reviewed studies

AI Tool Category	Examples	Frequency (n)
ChatGPT & GPT Models	ChatGPT, GPT-3.5	5
Automated Writing Evaluation	ETS Criterion, Turnitin	3
Grammar & Paraphrasing Tools	Grammarly, Quillbot	3
Feedback Tools	AI-generated feedback systems	1
Language Learning Tools	Duolingo, Chatbots	1
General AI Tools	Unspecified	1

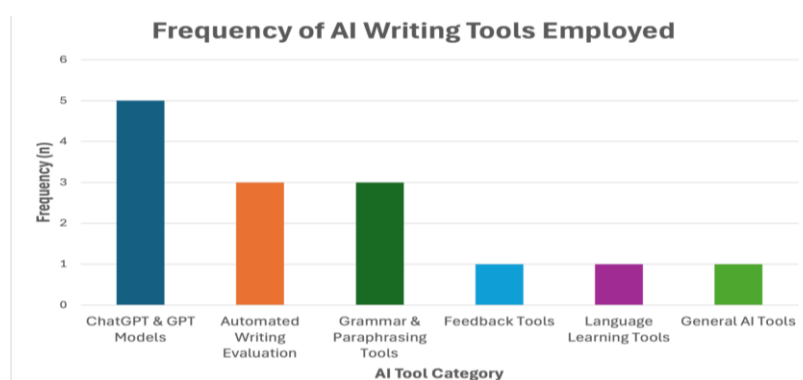


Figure 2: Frequency of AI Writing Tools used in reviewed studies

A clear insight into the current trends and preferences of AI technologies applied in the enhancement of ESL writing instruction across the review studies were presented in both data of frequency. This study highlighted the popularity of AI tools that have emerged in education with its ability to support idea generation and drafting features available that directly impact learners' motivation by increasing learner autonomy and confidence. The less frequent use of language learning tools and platforms suggested that there is a gap of these applications in leveraging the motivational support in writing. In summary, the distribution table and graph have demonstrated the potential effects of these tools in supporting writing motivation among learners.

4.2 Reported Impacts of AI Writing Tools on Motivation

The motivational impacts were examined from the selected articles using a systematic thematic synthesis, with the motivational impacts from each study being coded and generalised into five major themes which were: Confidence and Self-Efficacy, Engagement and Interest, Feedback and Support, Autonomy & Ownership and Reduced Anxiety. As tabulated in Table 5, the analysis from the 14 reviewed papers indicated that the AI Writing Tools indeed resulted in positive motivational impacts, with the records of at least three out of five impacts being addressed. Remarkably, Confidence and Self-Efficacy were recognised as the most commonly observed outcome of the use of AI Writing Tools.

Table 5: Motivational impacts of AI Writing Tools

Article	Confidence & Self-Efficacy	Engagement & Interest	Feedback & Support	Autonomy & Ownership	Reduced Anxiety
1	✓	✓	✓	✓	
2	✓	✓	✓	✓	✓
3	✓	✓	✓	✓	✓
4	✓	✓	✓	✓	
5	✓	✓	✓	✓	✓
6	✓	✓	✓	✓	✓
7	✓	✓	✓	✓	✓
8	✓	✓	✓	✓	✓
9	✓	✓	✓	✓	✓
10			✓	✓	
11	✓	✓	✓	✓	✓
12	✓	✓	✓	✓	✓
13	✓	✓	✓	✓	✓

14	✓	✓	✓	✓	✓
TOTAL	13	13	14	14	11

Note. This table summarises the reported impacts of AI writing tools on various types of learner motivation in English writing, as extracted and categorised from the 14 selected articles.

The results presented in Table 5 provided a clear focus of this systematic review, which is the impact of AI writing tools on learners' motivation in English writing. Across the 14 reviewed papers, confidence and self-efficacy were the most commonly reported outcomes across the reviewed studies, followed by engagement and interest, feedback and support, autonomy and ownership, and reduced anxiety. This implies that writing which is enhanced with AI develops writing proficiency and cultivates learners' motivation.

5. Discussion

The findings from this systematic review shed light on the extent to which AI Writing Tools are progressively evolving and becoming impactful to motivate students to write in English. This review, which based on the 14 empirical studies published between 2021 and 2025, supported that writing instruction was elevated by the application of AI technologies. The most prevalent AI tools implemented in the components of writing were identified to be generative AI tools like the GPT as indicated in the finding section of Table 4. The comprehensive adoption of these tools indicates that education is moving to a global trend of employing AI to address and resolve prevalent issues in writing skills (Huang et al., 2023).

The shortcomings of students' motivation, lack of confidence and writing anxiety could also be resolved by the integration of AI. This is consistent with the research question which is investigating the reported impacts of AI writing tools on learners' motivation in English writing. Across the reviewed studies, upon successful application of AI into writing activities, evidence indicated that students were found to have an increased autonomy, engagement to tasks, enhanced self-confidence and reduced anxiety. However, the advantages were not consistent across the studies, several studies reported the tendencies toward over-reliance on AI suggestions that contrained the development of critical thinking skills.

Learners' confidence levels were increased followed by prompt AI feedback as presented in a significant number of studies reviewed that validated the theory of self-efficacy. The studies highlighted that when learners perceive themselves as capable learners and able to take charge of their tasks, their motivation levels increase. Chang and Tsai (2022) proposed that self-efficacy has a major influence on how emotions are perceived and controlled to sustain motivational levels thereby influencing the application of learning in daily life. These insights are evidently supported by AI writing tools as it offers instantaneous feedback that promotes learning development, thus increasing learners' confidence and self-efficacy in writing (Alsariera & Alsaraireh, 2024). Existing research by Guo et al., (2023) supports the claim that AI-driven chatbots have been encouraging the

development of critical thinking skills while contributing to improved motivation in task completion. Writing, a skill that requires high cognitive engagement, frequently causes learners' anticipated anxiety towards failure in writing.

Additionally, the analytical outcomes of the review also emphasised the manner in which AI technologies could result in greater students' interest and engagement in writing. By implementing the use of AI technologies like ChatGPT, QuillBot, Grammarly, students' cognitive engagement could be enhanced as they are able to receive stylistic feedback and generate ideas in writing. Research has proven that intrinsic motivation is increased when learners are competent and have the autonomy to complete the task (He et al., 2025).

The findings by David and Weinstein (2024) have claimed that students' fulfilment of core psychological needs in autonomy, competence and relatedness was positively impacted by a strong sense of intrinsic motivation which resulted in academic well-being. According to the research reviewed, AI technologies assisted in meeting students' needs where students acquire competence in writing via feedback that are real-time and helped to progress in draft management. Furthermore, applications like Grammarly and QuillBot allow learners to take charge of their own sentence enhancement which also act as a linguistic scaffolding that could enhance proficiency (Li & Wilson, 2025).

Despite the predominantly positive effects observed from the reviewed articles, the results also highlighted the possible drawbacks, and pedagogical implications emerge as part of the current trend. Although grammar checkers and AWE tools aid in refining surface linguistic accuracy such as grammar and punctuation, they might fall short in supporting the cultivation of advanced writing skills including the needs of critical thinking. A notable limitation identified can be observed from students who rely too much on automated tools to help them with writing tasks may encounter difficulties writing independently. Research conducted by Zhao et al. (2025) has proclaimed that it is ultimately vital to encourage students to consistently reflect their experiences with the use of these tools while cultivating a positive mentality on the use of such technology in fostering learning.

The researchers also suggested that instead of permitting students to be overly reliant on the use of AI technologies in helping them to complete the assigned tasks, teachers can guide them to evaluate the practicality of these tools in improving their metacognitive writing abilities. Even though autonomy was considerably elevated in the context of writing practices, teachers should direct students to the ethical applications of AI technologies effectively to aid in learning development (Slimi et al., 2022). The overall findings indicated that AI writing tools have a vast potential in increasing students' motivation in English writing.

6. Conclusion

This systematic review critically investigated the impact on learner motivation that derived from the incorporation of AI in writing instruction. It was clarified that pedagogical shifts are evolving and AI writing tools were reported to motivate students in writing experiences. The reviewed studies highlighted that

AI writing tools have the potential to elevate learners' engagement and motivational levels. This reflects that AI has no longer been regarded solely as a technological advancement.

A more comprehensive paradigm of education was supported derived from these references that will encourage the self-directed growth of learners in academic development. These applications of AI aforementioned imply a shift in learner motivation and instructional practices in writing needed to be reevaluated to sustain students' motivation in the digital surrounding environment.

7. Limitations and Future Recommendations

Although studies provided multiple glimpses of AI' s impact on motivation, it was not uniformly dispersed across educational levels. The lack of longitudinal research restricts the interpretation of information towards the effects of long-term motivation through the use of AI in writing. Although the reviewed studies spanned across multiple countries, the majority are in the contexts of Asian and Middle Eastern countries, with limited representations from Western countries. This may affect the generalizability of the findings. Besides, the ethical issues of engagement, reliance and teachers' instruction were brought up as a result of the prevalence in AI tools. These fields are still underexplored. As the role of AI propels in education, insights on pedagogical and critical thinking are essential to be studied further.

Future research should prioritize in adopting a comprehensive approach to conduct longitudinal studies to examine the sustained motivational outcomes of AI writing tools in supporting learners' motivation and writing development across diverse educational contexts. Employing mixed-method or experimental research designs would provide a holistic understanding on the relationship of the use of AI and motivation. Furthermore, future research should explore the mediating roles of teacher facilitation and pedagogical design in optimising motivational impacts as these dimensions radically alter learners' interaction with AI-powered tools.

Moreover, future research should expand the geographical scope of review studies to allow for a comprehensive understanding and factors that may influence learner motivation in ESL writing. Equally significant is the consideration of ethical and policy issues of integrating AI in writing instruction must be addressed specifically on issues such as academic integrity and the potential overreliance on AI tools. In conclusion, the review advances integrated understanding of AI and its affordances in motivation impacts, enriching the study of AI collaboration in education and lays the groundwork for learner-centered practices in teaching and learning of writing.

8. Acknowledgements

The paper remains an accurate representation of the authors' work and intellectual contributions.

9. References

- Alharbi, W. (2023). AI in the foreign language classroom: A pedagogical overview of automated writing assistance tools. *Education Research International*, 2023(1), 4253331. <https://doi.org/10.1155/2023/4253331>
- Almuhanna, M. A. (2025). Teachers' perspectives of integrating AI-powered technologies in K-12 education for creating customized learning materials and resources. *Education and Information Technologies*, 30(8), 10343-10371. <https://doi.org/10.1007/s10639-024-13257-y>
- Almusaed, A., Almssad, A., Yitmen, I., & Homod, R. Z. (2023). Enhancing student engagement: Harnessing "AIED"'s power in hybrid education – A review analysis. *Education Sciences*, 13(7), 632. <https://doi.org/10.3390/educsci13070632>
- Alsariera, A. H., & Alsaraireh, M. Y. (2024). Advancing EFL Writing Proficiency in Jordan: Addressing Challenges and Embedding Progressive Strategies. *International Journal of Arabic-English Studies (IJAES)*, 24(2). <https://doi.org/10.33806/ijaes.v24i2.664>
- Al-Smadi, O. A., Ab Rashid, R., Saad, H., Zrekat, Y. H., Kamal, S. S. L. A., & Uktamovich, G. I. (2024). Artificial intelligence for English language learning and teaching: Advancing sustainable development goals. *Journal of Language Teaching and Research*, 15(6), 1835-1844. <https://doi.org/10.17507/jltr.1506.09>
- Alzubi, A. A. F., & Nazim, M. (2024). Students' intrinsic motivation in EFL academic writing: Topic-based interest in focus. *Heliyon*, 10(1). <https://doi.org/10.1016/j.heliyon.2024.e24169>
- Bai, B., & Guo, W. (2021). Motivation and self-regulated strategy use: Relationships to primary school students' English writing in Hong Kong. *Language Teaching Research*, 25(3), 378-399. <https://doi.org/10.1177/1362168819859921>
- Biju, N., Abdelrasheed, N. S. G., Bakiyeva, K., Prasad, K. D. V., & Jember, B. (2024). Which one? AI-assisted language assessment or paper format: an exploration of the impacts on foreign language anxiety, learning attitudes, motivation, and writing performance. *Language Testing in Asia*, 14(1), 45. <https://doi.org/10.1186/s40468-024-00322-z>
- Chan, S. T. S., Lo, N. P. K., & Wong, A. M. H. (2024). Enhancing university level English proficiency with generative AI: Empirical insights into automated feedback and learning outcomes. *Contemporary Educational Technology*, 16(4), ep541. <https://doi.org/10.30935/cedtech/15607>
- Chang, W. L., & Sun, J. C. Y. (2024). Evaluating AI's impact on self-regulated language learning: A systematic review. *System*, 126, 103484. <https://doi.org/10.1016/j.system.2024.103484>
- Chang, Y. C., & Tsai, Y. T. (2022). The effect of university students' emotional intelligence, learning motivation and self-efficacy on their academic achievement – online English courses. *Frontiers in Psychology*, 13, 818929. <https://doi.org/10.3389/fpsyg.2022.818929>
- David, L., & Weinstein, N. (2024). Using technology to make learning fun: technology use is best made fun and challenging to optimize intrinsic motivation and engagement. *European Journal of Psychology of Education*, 39(2), 1441-1463. <https://doi.org/10.1007/s10212-023-00734-0>
- Dewi, R. C., Prima Gusti Yanti, & Wini Tarmini. (2025). The Impact of the Integration of Metacognitive Strategy in the Flipped Classroom Model on Vocational High School Students' Writing Skill, Writing Anxiety, and Writing Self-Efficacy. *International Journal of Learning Teaching and Educational Research*, 24(2), 133–152. <https://doi.org/10.26803/ijlter.24.2.7>
- Ding, L., & Zou, D. (2024). Automated writing evaluation systems: A systematic review of Grammarly, Pigai, and Criterion with a perspective on future directions in the age

- of generative artificial intelligence. *Education and Information Technologies*, 29(11), 14151-14203. <https://doi.org/10.1007/s10639-023-12402-3>
- Engeness, I., & Gamlem, S. M. (2025). Exploring AI-Driven Feedback as a Cultural Tool: A Cultural-Historical Perspective on Design of AI Environments to Support Students' Writing Process. *Integrative Psychological and Behavioral Science*, 59(1), 23. <https://doi.org/10.1007/s12124-025-09894-8>
- Fathi, J., & Rahimi, M. (2024). Utilising artificial intelligence-enhanced writing mediation to develop academic writing skills in EFL learners: a qualitative study. *Computer Assisted Language Learning*, 1-40. <https://doi.org/10.1080/09588221.2024.2374772>
- Guo, K., Zhong, Y., Li, D., & Chu, S. K. W. (2023). Effects of chatbot-assisted in-class debates on students' argumentation skills and task motivation. *Computers & Education*, 203, 104862. <https://doi.org/10.1016/j.compedu.2023.104862>
- He, P., Hamid, A. H. A., & Nor, M. Y. M. (2025). Investigating Affective Learning Within Teaching Strategies for ESL College Students: A Systematic Review. *International Journal of Learning, Teaching and Educational Research*, 24(5), 517-536. <https://doi.org/10.26803/ijlter.24.5.27>
- He, Y. (2024). The metaphor of AI in writing in English: A reflection on EFL learners' motivation to write, enjoyment of writing, academic buoyancy, and academic success in writing. *International Review of Research in Open and Distributed Learning*, 25(3), 271-286. <https://doi.org/10.19173/irrodl.v25i3.7769>
- Huang, X., Zou, D., Cheng, G., Chen, X., & Xie, H. (2023). Trends, research issues and applications of artificial intelligence in language education. *Educational Technology & Society*, 26(1), 112-131. <https://www.jstor.org/stable/48707971>
- Huang, A. Y., Lu, O. H., & Yang, S. J. (2023). Effects of artificial Intelligence-Enabled personalized recommendations on learners' learning engagement, motivation, and outcomes in a flipped classroom. *Computers & Education*, 194, 104684. <https://doi.org/10.1016/j.compedu.2022.104684>
- Hysaj, A., Dean, B. A., & Freeman, M. (2025). Exploring the purposes and uses of generative artificial intelligence tools in academic writing for multicultural students. *Higher Education Research & Development*, 1-15. <https://doi.org/10.1080/07294360.2025.2488862>
- Jose, J., & Jose, B. J. (2024). Educators' academic insights on artificial intelligence: challenges and opportunities. *Electronic Journal of e-Learning*, 22(2), 59-77. <https://doi.org/10.34190/ejel.21.5.3272>
- Kamalov, F., Santandreu Calonge, D., & Gurrib, I. (2023). New era of artificial intelligence in education: Towards a sustainable multifaceted revolution. *Sustainability*, 15(16), 12451. <https://doi.org/10.3390/su151612451>
- Kanwal, A. (2025). Exploring the Impact of ChatGPT on Psychological Factors in Learning English Writing among Undergraduate Students. *World Journal of English Language*, 15(3), 404-404. <https://ideas.repec.org/a/jfr/wjel11/v15y2025i3p404.html>
- Krause, S., Panchal, B. H., & Ubhe, N. (2025). Evolution of learning: Assessing the transformative impact of generative AI on higher education. *Frontiers of Digital Education*, 2(2), 21. <https://doi.org/10.1007/s44366-025-0058-7>
- Li, M., & Wilson, J. (2025). AI-Integrated Scaffolding to Enhance Agency and Creativity in K-12 English Language Learners: A Systematic Review. *Information*, 16(7), 519. <https://doi.org/10.3390/info16070519>
- Mohammadi Zenouzagh, Z., Admiraal, W., & Saab, N. (2023). Learner autonomy, learner engagement and learner satisfaction in text-based and multimodal computer mediated writing environments. *Education and Information Technologies*, 28(11), 14283-14323. <https://doi.org/10.1007/s10639-023-11615-w>
- Mohammed, S. J., & Khalid, M. W. (2025). Under the world of AI-generated feedback on writing: Mirroring motivation, foreign language peace of mind, trait emotional

- intelligence, and writing development. *Language Testing in Asia*, 15(1), 7. <https://doi.org/10.1186/s40468-025-00343-2>
- Mohebbi, A. (2025). Enabling learner independence and self-regulation in language education using AI tools: a systematic review. *Cogent Education*, 12(1), 2433814. <https://doi.org/10.1080/2331186x.2024.2433814>
- Na, Z., Singh, C. K. S., Jie, D., & Lun, W. W. (2024). Scripting success: a systematic literature review of the process genre approach for writing in Asian education. *Перспективы науки и образования*, 1(67), 48-69. <https://doi.org/10.32744/pse.2024.1.3>
- Nasr, A. (2024). Advancing Self-Directed Learning in the Saudi EFL Higher Education: A Call to Further Action. *International Journal of Learning Teaching and Educational Research*, 23(8), 38-56. <https://doi.org/10.26803/ijlter.23.8.3>
- Pektaş, H. M., Karamustafaoglu, O., & Çelik, H. (2025). The Role of Educational Data Mining and Artificial Intelligence Supported Learning Analytics on Conceptual Change: New Approaches to Differentiated Instruction. *Journal of Science Education and Technology*, 1-26. <https://doi.org/10.1007/s10956-025-10214-3>
- Seyyedrezaei, M. S., Amirousefi, M., Gimeno-Sanz, A., & Tavakoli, M. (2024). A meta-analysis of the relative effectiveness of technology-enhanced language learning on ESL/EFL writing performance: Retrospect and prospect. *Computer Assisted Language Learning*, 37(7), 1771-1805. <https://doi.org/10.1080/09588221.2022.2118782>
- Shao, Z., Zhao, R., Yuan, S., Ding, M., & Wang, Y. (2022). Tracing the evolution of AI in the past decade and forecasting the emerging trends. *Expert Systems with Applications*, 209, 118221. <https://doi.org/10.1016/j.eswa.2022.118221>
- Slimi, Z., Al Alawai, F., Al Alyani, H., Al Abri, S., Al-Farsi, F. A., & Al Balushi, K. (2022). Writing issues in ESL and their potential solutions: Case study IMCO's Foundation students. *Journal of Educational and Social Research*, 12(6), 81-93. <https://doi.org/10.36941/jesr-2022-0146>
- Song, C., & Song, Y. (2023). Enhancing academic writing skills and motivation: assessing the efficacy of ChatGPT in AI-assisted language learning for EFL students. *Frontiers in Psychology*, 14, 1260843. <https://doi.org/10.3389/fpsyg.2023.1260843>
- Vistorte, A. O. R., Deroncele-Acosta, A., Ayala, J. L. M., Barrasa, A., López-Granero, C., & Martí-González, M. (2024). Integrating artificial intelligence to assess emotions in learning environments: a systematic literature review. *Frontiers in psychology*, 15, 1387089. <https://doi.org/10.3389/fpsyg.2024.1387089>
- Wang, Y., Luo, X., Liu, C. C., Tu, Y. F., & Wang, N. (2022). An integrated automatic writing evaluation and SVVR approach to improve students' EFL writing performance. *Sustainability*, 14(18), 11586. <https://doi.org/10.3390/su141811586>
- Wei, L. (2023). Artificial intelligence in language instruction: impact on English learning achievement, L2 motivation, and self-regulated learning. *Frontiers in psychology*, 14, 1261955. <https://doi.org/10.3389/fpsyg.2023.1261955>
- Yang, M., Meng, X., & Deris, F. D. (2025). Writing with motivation: To delve into the impacts of modifications in academic materials on learners' motivation, creativity, and writing progress in online instruction. *Learning and Motivation*, 89, 102086. <https://doi.org/10.1016/j.lmot.2024.102086>
- Yin, J., Goh, T. T., & Hu, Y. (2024). Interactions with educational chatbots: the impact of induced emotions and students' learning motivation. *International Journal of Educational Technology in Higher Education*, 21(1), 47. <https://doi.org/10.1186/s41239-024-00480-3>
- Yunus, M. M., Thambirajah, V., Said, N. E. M., & Singh, C. K. S. (2021). Designing a module as a strategic solution to enhance creativity in the teaching of writing. *International Journal of English Language and Literature Studies*, 10(2), 94-104. <https://doi.org/10.18488/journal.23.2021.102.94.104>

- Zhang, S., Shan, C., Lee, J. S. Y., Che, S., & Kim, J. H. (2023). Effect of chatbot-assisted language learning: A meta-analysis. *Education and Information Technologies*, 28(11), 15223-15243. <https://doi.org/10.1007/s10639-023-11805-6>
- Zhang, X., & Umeanowai, K. O. (2025). Exploring the transformative influence of artificial intelligence in EFL context: A comprehensive bibliometric analysis. *Education and Information Technologies*, 30(3), 3183-3198. <https://doi.org/10.1007/s10639-024-12937-z>
- Zhang, N., Wong, W. L., & Barrot, J. (2025). Primary teachers' acceptance and sustained adoption of AI powered learner corpora for writing instruction through TAM and ECM perspectives. *Scientific Reports*, 15(1). <https://doi.org/10.1038/s41598-025-21205-0>
- Zhao, X., Sbaffi, L., & Cox, A. (2025). The digitisation of writing in higher education: exploring the Use of wordtune as an AI writing assistant. *Electronics*, 14(6). <https://doi.org/10.3390/electronics14061194>
- Zhao, D. (2025). The impact of AI-enhanced natural language processing tools on writing proficiency: An analysis of language precision, content summarization, and creative writing facilitation. *Education and Information Technologies*, 30(6), 8055-8086. <https://doi.org/10.1007/s10639-024-13145-5>