



The Impact of Artificial Intelligence on Enhancing EFL Students' Writing Skills: A Case Study at the Faculty of Arts, Alasmarya Islamic University

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Abstract

This study investigates the role of artificial intelligence (AI) tools in enhancing English language writing skills among university students studying English as a foreign language (EFL). EFL learners frequently encounter challenges in developing writing proficiency, including limited language proficiency and academic vocabulary, grammatical inaccuracies, inappropriate punctuation, collocational errors, and low confidence in writing. A quantitative research design was employed to examine students' perceptions of and experiences with AI-assisted writing. Data were collected through a structured questionnaire administered to 40 EFL students majoring in English at Al-Asmariya Islamic University. The questionnaire addressed demographic characteristics, effective AI integration and application strategies, the contribution of AI tools to specific writing sub-skills, students' perceptions and concerns, and potential over-reliance on AI technologies. The data were analyzed using descriptive statistics, including frequencies and percentages, with the assistance of Microsoft Excel.

The findings demonstrate that AI tools are generally perceived to have a positive impact on the development of EFL writing skills. In particular, students reported that AI tools contribute to improvements in sentence structure, paragraph organization, collocational knowledge, and mechanical and linguistic accuracy. The findings further indicate that AI tools can enhance students' motivation and provide useful supplementary support during the writing process. However, concerns regarding over-reliance highlight the need for careful and purposeful use of AI technologies. Overall, the study concludes that AI tools can function as effective supplementary resources for EFL writing instruction when integrated in a structured and pedagogically appropriate manner. Such integration can maximize the benefits of AI while supporting learner autonomy and independent writing development.

Keywords: artificial intelligence, EFL writing, writing skills, AI-assisted writing, writing development, university students, learner autonomy

المخلص:

تهدف هذه الدراسة إلى بحث دور أدوات الذكاء الاصطناعي في تعزيز مهارات الكتابة باللغة الإنجليزية لدى طلبة الجامعة الذين يدرسون اللغة الإنجليزية كلغة أجنبية (EFL) ويواجه متعلمو اللغة الإنجليزية كلغة أجنبية في كثير من الأحيان تحديات متعددة

في تطوير كفاءتهم الكتابية، من بينها محدودية الكفاءة اللغوية والمفردات الأكاديمية، والأخطاء النحوية، والاستخدام غير المناسب لعلامات الترقيم، وأخطاء التلازم اللفظي، وضعف الثقة في الكتابة. وقد اعتمدت الدراسة منهجًا كميًا بهدف استقصاء تصورات الطلبة حول استخدام أدوات الذكاء الاصطناعي في الكتابة وتجاربهم معها. وُجمعت البيانات من خلال استبانة منظمة وُزعت على 40 طالبًا وطالبة من طلبة قسم اللغة الإنجليزية في الجامعة الأسمرية الإسلامية. وتناولت الاستبانة الخصائص الديموغرافية للمشاركين، واستراتيجيات دمج أدوات الذكاء الاصطناعي وتطبيقها بصورة فعالة، وإسهام هذه الأدوات في تنمية مهارات الكتابة الفرعية، بالإضافة إلى تصورات الطلبة ومخاوفهم بشأن استخدام هذه التقنيات، واحتمالية الاعتماد المفرط عليها. وحُللت البيانات باستخدام الإحصاء الوصفي، بما في ذلك التكرارات والنسب المئوية، بالاستعانة ببرنامج Microsoft Excel. أظهرت النتائج أن أدوات الذكاء الاصطناعي يُنظر إليها بصورة عامة على أنها ذات تأثير إيجابي في تطوير مهارات الكتابة باللغة الإنجليزية لدى متعلمي اللغة الإنجليزية كلغة أجنبية. وعلى وجه الخصوص، أفاد الطلبة بأن هذه الأدوات تساهم في تحسين بناء الجملة، وتنظيم الفقرات، ومعرفة التلازم اللفظي، والدقة الميكانيكية واللغوية. كما أشارت النتائج إلى أن أدوات الذكاء الاصطناعي يمكن أن تعزز دافعية الطلبة وتوفر دعمًا تعليميًا مفيدًا أثناء عملية الكتابة. ومع ذلك، فإن المخاوف المتعلقة بالاعتماد المفرط على هذه الأدوات تؤكد الحاجة إلى استخدامها بصورة واعية وهادفة. وبوجه عام، خلصت الدراسة إلى أن أدوات الذكاء الاصطناعي يمكن أن تؤدي دورًا فعالًا بوصفها موارد تعليمية مساندة في تدريس الكتابة باللغة الإنجليزية كلغة أجنبية، شريطة دمجها بطريقة منظمة وملائمة من الناحية التربوية. ومن شأن هذا الدمج أن يعظم فوائد الذكاء الاصطناعي، مع دعم استقلالية المتعلم وتنمية قدرته على الكتابة بصورة مستقلة.

Introduction and Background

Artificial intelligence (AI) has become one of the most important educational tools in the process of teaching and learning the writing skills, which can also be considered as a double-edged weapon by most of the educators in the educational sector. Today, undergraduate students are becoming more dependent on artificial intelligence in writing their assignments, completing them easily without any benefit and without knowing how to write them correctly. Many students who are studying English as a foreign language (EFL) faced many challenges in developing their writing skills, due to the lack of language proficiency (limited academic vocabulary), grammatical accuracy, correct use of punctuation marks, collocation errors and lack of confidence. One solution that students are usually resort nowadays to solve these problems can be using artificial intelligence. Artificial intelligence can offer many advantages to students when they start learning the various writing skills. For instance, the improvement of artificial intelligence has led to the evolution of novel writing tools that offer support to authors and students through the provision of sentence completion options and text-generating abilities similar to the human output (Al-Raimi et al, 2024).

The integration of Artificial Intelligence (AI) in the process of teaching and learning has driven significant advancements in educational methodology, fundamentally reforming the process of language instruction (Stadnik et al., 2024). AI tools have provided innovative solutions for educators seeking to meet the diverse needs of students by facilitating adaptive learning experiences and enhancing classroom interaction through the clarification of real-time data (Bagash & Al-Sofi, 2024).

Through the context of English as a Foreign Language (EFL), writing remains a complex and critical skill that poses significant challenges for learners. Writing is more than just a tool for communication among human beings; it is a multifaceted process that requires the synthesis of numerous sub-skills (Hien, 2024). Successful writing proficiency necessitates the mastery of generating and organizing ideas, alongside adherence to essential writing conventions, including grammar, vocabulary, word choice, and punctuation (Pratama & Hastuti, 2024). Many EFL

learners grapple with common difficulties such as limited feedback, challenges in self-correction, and a general lack of motivation.

AI offers a promising avenue to address these pedagogical difficulties. Recent technological advancements have led to the creation of sophisticated AI tools, such as Automated Writing Evaluation (AWE) systems and Generative AI, which provide immediate and personalized feedback to writers. These systems assist students in refining lower-level writing skills like grammar and vocabulary (Alshehri, 2025; Jatin et al., 2023). Numerous studies have affirmed the promising role of AI in offering frequent feedback and practice opportunities, thereby enhancing students' writing abilities (Alzahrani, 2024). Therefore, this study aims to examine the impact of these specific AI tools on the learning and development of writing skills among EFL college students, assessing their impact on writing quality, self-efficacy, and the ability for long-term skill development (Lee, 2020).

Problem Statement

Despite the clear benefits of AI in providing instant feedback and improving writing accuracy in the short term, the growing over-reliance on Artificial Intelligence (AI) among students presents a crucial concern for academic integrity and genuine skill acquisition. Studies suggest that while AWE and AI can lead to immediate improvements, there is a distinct risk of students becoming overly dependent on these systems, potentially leading to less internal attention to grammatical accuracy or critical thought in subsequent drafts.

When students excessively rely on AI tools to complete assignments, there is a risk of stifling independent writing, critical thinking, and the development of basic cognitive skills necessary for complex composition. The reliance on external mechanisms (AI) for error correction may prevent the internalization of language rules and the organic development of writing fluency.

This research, therefore, addresses the dual nature of AI in the EFL classroom: How can specific AI tools, like AWE, be effectively integrated into the curriculum to maximize the enhancement of writing sub-skills (e.g., coherence, cohesion, lexical resource, and grammatical range) while simultaneously establishing pedagogical guidelines to mitigate the risk of over-reliance that undermines students' long-term independent skill acquisition?

Research Questions

The study seeks to answer the following research questions:

1. What are the effective strategies for integrating and applying Artificial Intelligence **tools** to enhance the overall writing skills of EFL college students at the Faculty of Arts, Alasmarya Islamic University?
2. To what extent do AI tools contribute to the development of specific EFL students' writing sub-skills, such as coherence, lexical resource, and grammatical range?
3. How do EFL students perceive the effectiveness of Artificial Intelligence in improving their writing skills, and what are their specific concerns or challenges regarding the potential for **over-reliance** on these tools?

Research Objectives

The objectives of this research are:

1. To identify and evaluate effective pedagogical strategies for applying AI to improve EFL students' writing skills.

2. To examine the specific contribution of AI tools to the development of students' writing sub-skills (e.g., coherence, lexical resource, and grammatical range).
3. To explore EFL students' perceptions of the effectiveness of AI in improving their writing skills, including their views on the benefits and the potential challenges of over-reliance.

Scope of Study

This study focuses on investigating the role of Artificial Intelligence tools in developing the writing skills of EFL students enrolled at the Faculty of Arts, Alasmarya University. The research is specifically concerned with the balance between utilizing AI for enhancing the students' writing skill and mitigating the risk of student over-dependence. By exploring the effects of incorporating AI tools into the teaching and learning of writing, this research hopes to provide data that will help the academic community and other stakeholders make informed judgments on the future role of AI especially in teaching and learning the writing skills (Hien, 2023).

Literature Review

Overview of Artificial Intelligence in Language Education

Artificial Intelligence (AI) has emerged as one of the most influential technological developments shaping education in recent years. No longer viewed as a distant or futuristic concept, AI has become an integral part of contemporary learning environments, offering creative and practical solutions to longstanding educational challenges. Its growing presence in classrooms and higher education institutions reflects a global shift toward technology-enhanced learning experiences that support both teachers and students in more effective ways.

Artificial Intelligence (AI) has emerged as one of the most influential technological developments shaping education in recent years. Nowadays, AI is not just a tool for the future anymore; it has become a very important part of modern education. It offers radical solutions to the common educational problems that teachers and students have suffered from for a long time. We can see that AI is growing in classrooms and universities. This shows a big change in the world toward using technology in learning to help teachers and students in a better way.

Definition of Artificial Intelligence in Language Education

Artificial Intelligence in Education (AIED) refers to the use of advanced technologies—such as Machine Learning, Natural Language Processing, and Computer Vision—to enhance teaching, learning, and educational administration (UNESCO, 2024). The overarching aim of AIED is to personalize learning according to the unique needs and abilities of individual students while reducing teachers' workload by automating repetitive tasks and allowing for more focused instructional time. Moreover, these systems analyze large amounts of educational data to produce insights that help institutions improve learning outcomes and support decision-making (U.S. Department of Education, 2023).

AI functions by simulating human intelligence, enabling systems to learn from data, make decisions, and solve problems. In education, this translates into tools and platforms capable of adjusting instructional content according to student progress, engaging learners through immediate feedback or interactive dialogue, and predicting which students may struggle or require additional support. Through these capabilities, AI enhances the overall learning process by offering adaptive instruction, ongoing assessment, and targeted intervention.

Evolution of AI Use in the Language Educational Environment

The use of artificial intelligence in language education has developed gradually over several decades, beginning in the mid-twentieth century with early programmed instruction systems.

These initial approaches laid the foundation for more advanced applications, leading to the emergence of Intelligent Tutoring Systems (ITS) between the 1980s and early 2000s. ITS relied on expert systems and cognitive modeling to provide personalized instructional guidance by modeling both student knowledge and curriculum content (Saftari et al., 2025).

Between 2010 and 2020, AI in education shifted toward adaptive learning systems and learning analytics. During this stage, machine learning and big data technologies were used to monitor student performance and automatically adjust learning paths. The primary focus of these systems was on predicting learning outcomes and optimizing instruction based on learner data, as seen in platforms such as TSH Anywhere blog (2025). Since 2022, the field has entered a new phase with the rise of Generative AI (GenAI), driven by large language models such as ChatGPT. Unlike earlier closed and rule-based systems, GenAI tools are capable of generating content, summarizing and translating texts, and engaging in open-ended educational dialogue while providing advanced feedback (Lo et al., 2024). This shift from controlled systems to more flexible and creative technologies has opened new possibilities for supporting language learning; particularly skills like writing that require adaptability and creativity.

The Role of AI in Supporting Language Skills

AI-driven platforms provide immediate corrections to EFL learners regarding grammar, vocabulary choice, coherence, and overall text organization. These platforms also provide EFL teachers with high levels of detailed feedback about the writing tasks that are often difficult for teachers to provide consistently, especially in large classes (Ekizoğlu, 2025).

AI technologies also expand opportunities for language practice through chatbots and interactive systems that allow EFL learners to engage in writing and speaking tasks within a safe, judgment-free environment. This ongoing interaction acts as a powerful incentive that encourages EFL students to practice more frequently and helps them develop greater fluency and confidence, free from fear of criticism and linguistic errors (Alghasab, 2025).

In addition, AI tools can analyze large sets of student writing tasks to identify recurring errors and areas of weakness. Such analytical techniques enable teachers to understand learners' needs more precisely and providing more instructional support on the aspects that require the most improvement. By highlighting common patterns, AI assists educators in designing more targeted and effective teaching interventions (Alangari, 2025).

Recent research highlights the growing effectiveness of AI in supporting students' writing skills development, particularly in English as a Foreign Language (EFL) learning. Alangari (2025) found that using AI tools such as ChatGPT significantly improved students' overall writing proficiency, largely because these tools offer individualized support that helps learners revise their work and enhance text quality. Similarly, Ekizoğlu (2025) showed that AI-generated feedback could effectively supplement traditional instruction by improving learners' fluency and accuracy. A systematic review by Lo et al. (2024) further reported that integrating ChatGPT into EFL and ESL writing classes encourages collaborative learning and critical thinking, although it also raises concerns about academic integrity. Collectively, these studies demonstrate that AI serves not just as a grammar checker but also as an interactive educational partner that fosters meaningful feedback and supports the development of advanced writing skills.

Writing skills in the EFL context

Writing is widely recognized as one of the most demanding skills for EFL learners as it relies on linguistic knowledge as well as cognitive and social abilities (Muamaroh et al., 2020). In this

context, writing is the ability to produce a clear, meaningful, and well-organized text, which requires appropriate use of grammar, vocabulary, and stylistic choices, alongside the skill to express ideas coherently (IOSR Journals, 2019). It is a multi-stage process involving planning, drafting, revising, and editing. For many EFL learners, this process can also become more complicated due to interference from their native language, which often results in recurring errors that require targeted instructional support.

Evaluating writing proficiency typically involves examining several key elements: coherence, or how logically ideas are presented; cohesion, referring to the linguistic devices that link parts of the text; lexical resource, which reflects the range and accuracy of vocabulary; and grammatical range and accuracy, which encompasses the correct use of varied structures. Yawiloeng (2025) notes that many EFL students struggle to manage these components simultaneously, often placing more emphasis on grammatical correctness while sacrificing fluency and coherence.

The literature indicates that EFL students face multiple challenges in writing, which can be categorized as linguistic and cognitive. Linguistically, vocabulary and grammar are the most challenging aspects (Taye, 2024). Taye (2024) found that students suffer from a lack of academic vocabulary and the inability to use complex grammatical structures correctly. Cognitively and organizationally, students struggle with generating ideas, organizing them into a logical structure, and developing supporting arguments (Muamaroh et al., 2020). These difficulties stem not only from weak linguistic competence but also from a lack of effective writing strategies and self-revision skills.

Therefore, feedback is a crucial element in the writing learning process, providing students with information about the quality of their work and how to improve it. Research has shown that effective feedback can lead to significant improvements in writing performance (Liu, 2022). In the EFL context, the importance of corrective feedback, which focuses on linguistic errors, is highlighted. However, the most effective feedback is that which is comprehensive, covering linguistic aspects, content, and organization, and is timely and understandable to the student (Tyson, 2016).

With the advent of AI, the focus has shifted to Automated Writing Evaluation (AWE). A study by Bae (2024) confirmed the importance of student engagement with both teacher feedback and AWE feedback, noting that automated feedback offers the advantage of immediacy and repetition, allowing students to review and improve their work repeatedly without waiting. This shift paves the way for understanding the role of AI tools as either an alternative or a complement to human feedback and assessment.

AI tools for Language Writing Development

The use of Artificial Intelligence tools in supporting the writing learning process for EFL learners has expanded significantly, offering a wide range of applications ranging from Automated Writing Evaluation systems to advanced Generative AI models. These tools differ in purpose and design; however, many studies highlight their positive influence on key areas of writing development (Kim and Kim, 2022; Fitria, 2021; Li and Hegelheimer, 2021).

The role of Automated Writing Evaluation (AWE) has become increasingly prominent as these systems provide instant assessments of written work using Machine Learning and Natural Language Processing (Ngo et al., 2024). AWE tools are particularly valued for improving linguistic accuracy, including spelling, punctuation, and aspects of grammar, although Ngo et al. (2024) note that their impact on grammar rules tends to be weaker than that of human feedback.

Some AWE programs also assess the structural arrangement of the text and comment on organization, helping students write more coherent paragraphs. Regular use of these systems reduces the delay between writing and feedback, which Sari (2024) suggests contributes to students' fluency.

In contrast, Generative AI tools such as ChatGPT represents a broader and more sophisticated category of writing support. These tools not only address superficial errors, but they can also understand context, generate coherent responses, and provide detailed feedback on meaning, style, and structure (Lo et al., 2024). Their ability to rephrase sentences and offer alternatives strengthens both grammatical range and vocabulary development. Yang (2024) found that ChatGPT significantly enhanced EFL learners' overall writing proficiency. These tools also assist in assessing coherence and cohesion by helping students generate outlines or refine the logical flow of their ideas. Although they are capable of correcting grammatical problems, their most valuable contribution lies in explaining errors and enhancing students' linguistic awareness (Shi, 2025).

Another widely used tool is Grammarly, which functions as a simplified form of automated evaluation and is particularly effective in improving linguistic accuracy through real-time corrections. Dewi (2022) demonstrated that Grammarly helps EFL students reduce common errors in grammar and style. Moreover, Maypida (2024) found that constant use of Grammarly increases learners' awareness of recurring mistakes, supporting the development of self-editing skills. However, Dizon (2024) warns that over-reliance on such tools may limit students' fluency and grammatical range if they accept corrections passively without engaging with the underlying rules.

A more structured form of AI support appears in Intelligent Tutoring Systems (ITS), which combine several AI components to deliver personalized instruction tailored to a learner's performance. ITS platforms adapt tasks to focus on specific weaknesses, whether in vocabulary or grammatical structures (Banawan, 2023). Through guided practice and explicit attention to syntactic complexity, these systems help strengthen students' control over academic sentence patterns and enhance overall linguistic accuracy, as demonstrated by Saftari et al.(2025) .

Finally, the growing use of chatbots in EFL learning environments offers interactive opportunities for writing practice. These conversational systems create stress-free spaces for learners to experiment with language, improving fluency and expanding vocabulary through contextual exposure (Duong, 2025). Chatbots can also guide brainstorming and idea organization before writing, which helps students produce more coherent texts (Du, 2024).

Research gap and conceptual model.

Despite the intellectual richness provided by previous studies on the role of Artificial Intelligence in developing the writing skills of English as (EFL) learners, a critical analysis of this literature reveals significant research gaps, particularly when applied to specific geographical and academic contexts.

This study addresses a significant contextual gap in the existing literature on AI-assisted writing instruction. While prior research has extensively examined the use of AI tools in Asian and European EFL settings (e.g., Yang, 2024; Ekizoğlu, 2025), little attention has been given to Libyan universities, particularly Alasmarya Islamic University. The distinctive educational context—including curricula design, institutional resources, and students' cultural and linguistic backgrounds—may influence how effective AI tools are in developing writing skills. However, these contextual factors remain largely unexplored in previous studies.

Another major gap lies in the prevailing emphasis on performance outcomes rather than learner experience. Many empirical studies (such as Alangari, 2025; Ngo et al., 2024) primarily assess measurable improvements in writing, including scores and error reduction. Although these findings are valuable, they overlook students' perceptions of AI tools, the challenges they encounter, and the impact of these tools on motivation and self-efficacy. As highlighted by Shi (2025), understanding the student perspective is crucial, yet qualitative research that foregrounds learner voices remains limited.

Finally, existing research often examines AI tools in isolation, focusing on a single application such as ChatGPT or Grammarly. There is a clear need for comprehensive comparative studies that evaluate multiple AI tool categories—such as Automated Writing Evaluation (AWE), Generative AI (GenAI), and Intelligent Tutoring Systems (ITS)—within the same educational context. Comparing their effects on different writing components, including accuracy, fluency, and organization, would provide more practical and evidence-based guidance for EFL teachers when selecting tools aligned with specific instructional goals.

Methodology

Methods of Data Collection

This study employed a questionnaire as the main instrument to collect data. Cohen et al. (2011: 256) argue that questionnaire research is “the most commonly used descriptive method in educational research”. The questionnaire, in this research, has been made to focus on former studies that examined the role of artificial intelligence in developing the writing skills for EFL students. It includes items related to how students use artificial intelligence tools, their writing background, and the dilemma of over-reliance on AI as an instrument for learning. The questionnaire uses five-point Likert scales to answer the questions from completely agree to extremely disagree.

Description of the Sample

The total number of students who participated in this study was forty students whose ages ranged from nineteen to twenty-two and they were studying EFL as a major subject of specialization in the Faculty of Arts, Alasmary University. The sample was selected based on those who regularly engage in writing classes that include the use of artificial intelligence tools. The sample was taken from different academic levels in the English department of the Faculty of Arts, Alasmary University.

Data Analysis

This section presents the data analysis of the questionnaire that distributed among students of the English Department at the College of Arts, Alasmary Islamic University. The questionnaire was analyzed using descriptive methods such as frequencies and percentages, with the assistance of Microsoft Excel. This section also discusses the survey results, highlighting key points that can contribute to improving students' writing skills using artificial intelligence without over-reliance on it, and how AI has become crucial for English as Foreign Language (EFL) students, particularly in the area of writing skills development.

Demographic information

The questionnaire was divided into four sections, each one designed to collect specific information about the participants. The first section addressed some personal information about the subjects of study, such as gender, academic level, and their familiarity with using artificial intelligence tools. The questionnaire was completed by forty students, seventeen males and twenty-three females. Males comprised 42.5% of respondents, while females comprised 57.5%, indicating a greater

interest among female students in using artificial intelligence to develop their writing skills. The graph below illustrates these percentages more clearly.

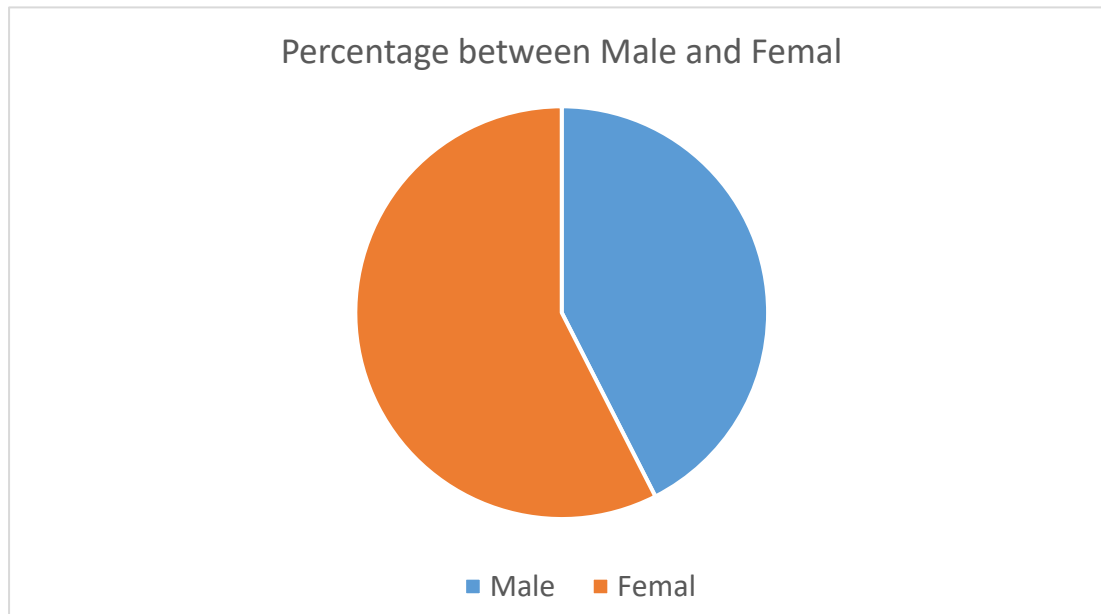


Figure 1: the distribution of participants by gender

The students who responded to the questionnaire were in grades ranging from the first semester to the eighth semester. The following graph below illustrates the percentage of students by grade level who responded to the questionnaire.

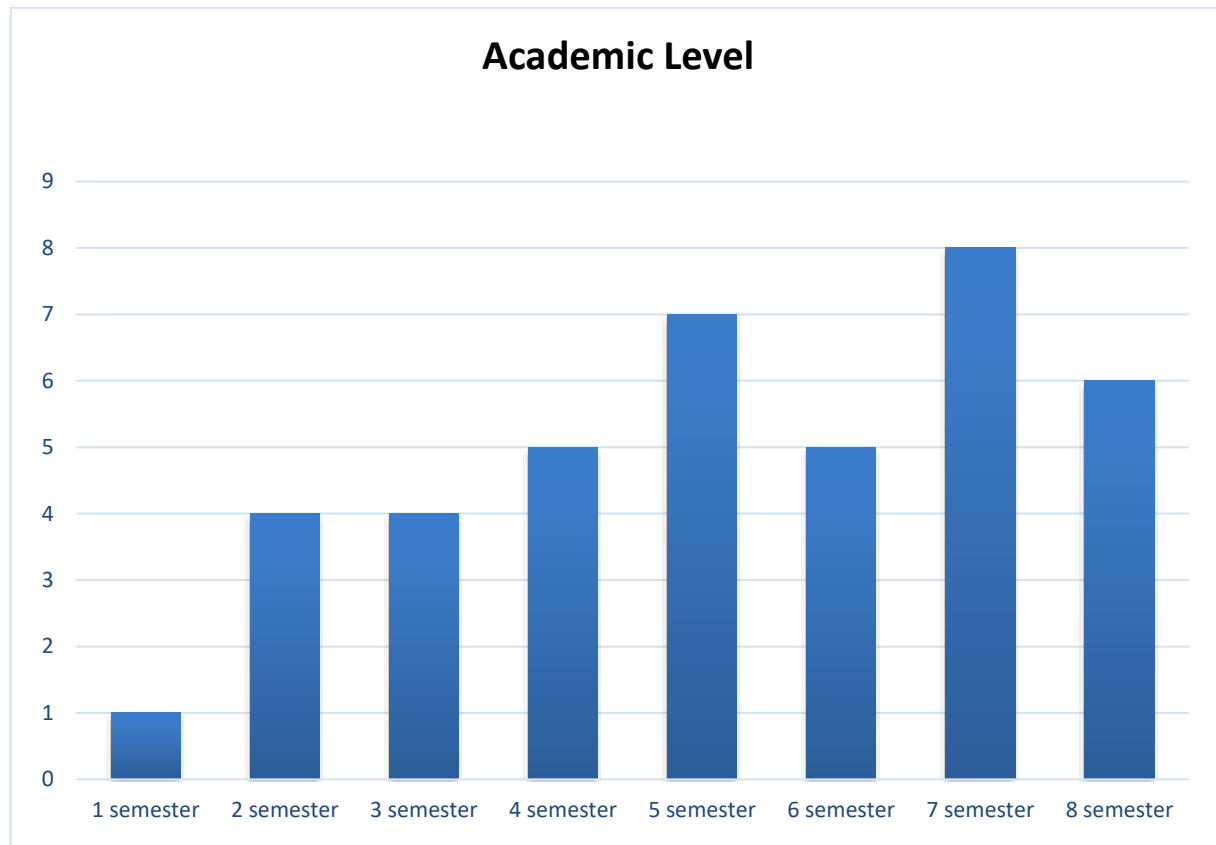


Figure 2: The percentage of respondents' academic level

The graph above shows that most of the students at one academic level who answered the questionnaire were in the seventh semester, and their number was eight students, representing 20% of the total number of students who answered the questionnaire. These results indicate that students studying at advanced levels are more interested in using artificial intelligence tools to improve their writing skills compared to novice students. Another reason that motivates students at advanced levels frequently use AI tools relates to their educational needs. Students at these academic levels, especially in the seventh semester, need to improve their writing skills because they need to employ them in writing their graduation research projects.

This section of the questionnaire addresses another important issue concerning the frequent use of AI tools in academic writing by students. The findings were based on participants' responses using a five-choice scale, as illustrated in Figure 3 below. The findings indicate that most of the respondents who use AI tools to improve their academic writing skills ranged from 'sometime' to 'often' representing 70% of the total number of participants whereas 20% of participants used it daily. These findings show that most students use AI tools in their writing assignments, which enables them to get the right feedback on their writing and thus improve their writing skills.

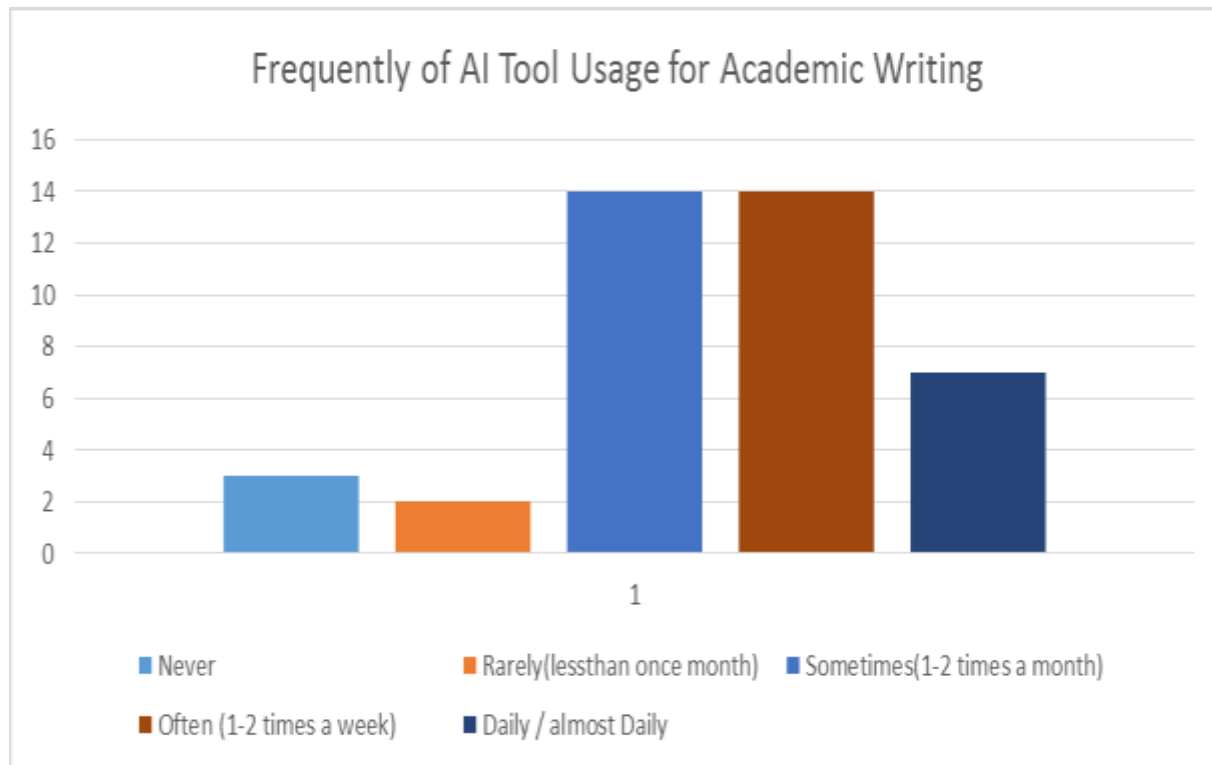


Figure 3: The percentage of Frequent Use of AI Tool in Academic writing

The final part of this section of the questionnaire concerned with the most popular AI tools used by students, such as chatGPT, Grammarly, QuillBot, Wordtune, and others, as well as the most frequently used tool. The results show that most students relied on using chatGPT more than any other AI tool, as clearly illustrated in Figure 4 below.

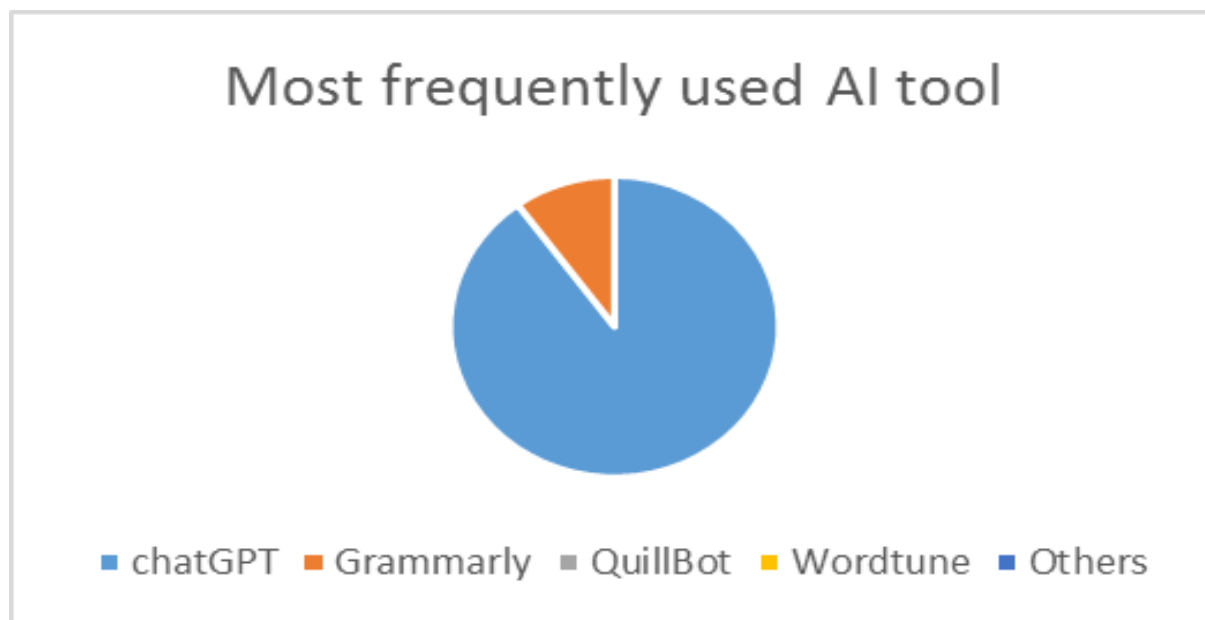


Figure 4: The most frequently used AI tool

The participants' responses stated that thirty-six students employed chatGPT in their writing assignments representing 90% percent of the total number while just four students out of forty

used Grammarly representing 10%, which means that chatGPT is the most popular tool used by students of English Department at Faculty of Arts, Al-Asmary Islamic University.

Effective Integration & Application Strategies

The second section of the questionnaire was designed to collect the data required to find answers for the first research question of this study. The data was collected according to a five-point Likert scale (1 = strongly disagree, 2 = disagree, 3 = unsure, 4 = agree, 5 = strongly agree), which was statistically analyzed and then converted into numbers and percentages as shown in Table (1) included below.

Table (1): Effective Integration and Application Strategies

No	Statement	Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree
1	I use AI tools to generate initial ideas or outlines for my writing assignments.	12 30%	11 27.5%	5 12.5%	6 15%	6 15%
2	I use AI tools to rephrase my sentences to improve clarity and academic flow.	8 20%	6 15%	5 12.5%	11 27.5%	10 25%
3	I use AI tools to check my writing for plagiarism or originality concerns.	1 2.5%	7 17.5%	4 10%	16 40%	12 30%
4	I actively review and critically edit the suggestions provided by AI tools rather than accepting them blindly.	7 17.5%	5 12.5%	2 5%	10 25%	16 40%
5	I use AI tools to practice writing different genres (e.g., argumentative, narrative).	4 10%	7 17.5%	3 7.5%	15 37.5%	11 27.5%
6	I use AI tools to receive immediate feedback on my writing structure and organization.	7 17.5%	2 5%	8 20%	13 27.5%	12 30%
7	I use AI tools to translate complex academic texts to better understand the content before writing.	6 15%	5 12.5%	6 15%	11 27.5%	12 30%
8	I use AI tools to generate example sentences to learn new grammatical structures.	6 15%	6 15%	5 12.5%	11 27.5%	12 30%
9	I believe that AI tools should be formally integrated into the EFL writing curriculum.	8 20%	3 7.5%	1 2.5%	15 37.5%	13 32.5%
10	I use AI tools to compare my writing style with professional or academic writing examples.	3 7.5%	7 17.5%	3 7.5%	17 42.5%	10 25%
11	I use AI tools to help me plan and monitor my writing goals.	7 17.5%	6 15%	3 7.5%	12 30%	12 30%
12	When AI corrects my mistake, I make an effort to understand <i>why</i> it was wrong so I can learn from it.	6 15%	5 12.5%	6 15%	11 27.5%	12 30%

Based on the number of responses and the percentage for each statement shown above in the table, it can be concluded that students adopted the following strategies when using AI tools to improve their English writing skills.

1- Planning Goals and Generating Ideas: It was clear from the calculated percentages of responses to statements one, eight and eleven of the questionnaire that the vast majority of students used AI tools to set their writing goals in order to monitor their progress in different writing stages. In addition to that, AI tools also used by most of students to produce initial ideas to help them developing outlines for their writing assignments.

2- Language Comprehension and Preparation: Students' responses for the statements two, six, seven and ten indicated that they employ artificial intelligence to translate or comprehend complex

academic texts corresponding to the original text before commencing the writing stage. They also ask the AI to provide example sentences that illustrate new grammatical structures or academic expressions. In addition, they compare their personal writing to professional or academic models to identify differences in style, vocabulary, organization, and tone.

3- Critical Review and Evaluation: Responses to the statements three, four and twelve showed that over 70% of participants acknowledged that relying on AI tools for their writing tasks would negatively affect their writing skills and could be considered plagiarism. They believe that suggestions obtained from these tools should be treated as recommendations, not as definitive answers that are not subject to analysis and critical evaluation. Grammatical and linguistic errors detected by AI tools should be reviewed and evaluated to understand why they are wrong and to learn the underlying rule, rather than simply accepting the corrections.

AI Contribution to Learn Specific Writing Sub-skills

To answer the second research question of this study, this section discusses the contribution of artificial intelligence tools to improve the writing sub-skills of EFL students. This analysis focuses on how AI tools support different aspects of writing, such as grammar accuracy, vocabulary, and sentence structure. The table below shows the third part of the questionnaire and the number of students who responded with the following options: (strongly disagree, disagree, neutral, agree, and strongly agree).

Table (2): AI Contribution to Learn Specific Writing Sub-skills

No	Statement	Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree
13	AI tools help me improve the logical flow and connection between my ideas.	7 17.5%	5 12.5%	9 22.5%	11 27.5%	8 20%
14	AI tools assist me in selecting more appropriate and precise vocabulary.	2 5%	9 22.5%	7 17.5%	10 25%	12 30%
15	AI tools help me to use a wider variety of complex sentence structures.	4 10%	6 15%	7 17.5%	14 35%	9 22.5%
16	The feedback from AI tools helps me reduce mechanical errors (e.g., punctuation, capitalization).	6 15%	5 12.5%	7 17.5%	12 30%	10 25%
17	AI tools help me ensure that my paragraphs have clear topic sentences and supporting details.	5 12.5%	5 12.5%	8 20%	11 27.5%	11 27.5%
18	My overall academic writing quality has improved since I started using AI tools.	4 10%	6 15%	6 15%	15 37.5%	9 22.5%
19	AI tools help me structure my essays according to academic conventions (Introduction, Body, and Conclusion).	5 12.5%	6 15%	7 17.5%	10 25%	12 30%
20	I feel more confident in my ability to produce error-free writing after using AI tools.	0 0%	5 12.5%	6 15%	20 50%	9 22.5%
21	AI tools help me to better understand which words naturally go together.	3 7.5%	7 17.5%	12 30%	10 25%	8 20%
22	I use AI tools to check the appropriateness of my tone for a specific audience or context.	5 12.5%	4 10%	5 12.5%	18 45%	8 20%

According to the student responses shown in Table 2 above, the results indicate that students generally perceive AI tools as contributing positively to the development of their English as a Foreign Language (EFL) writing sub-skills. The strongest positive responses were recorded in the

areas of grammar (57.5%), vocabulary (55%), linguistic accuracy (55%), and organization (55%), while coherence (47.5%) and collocational knowledge (45%) showed mixed opinions. Overall, the results suggest that AI tools contribute to multiple aspects of developing EFL writing skills, although their perceived effectiveness varies across different sub-skills.

Perceptions, Concerns, and Over-Reliance

This section explores the perceptions and concerns of EFL students regarding the use of AI tools in academic writing, with a particular focus on issues of over-reliance, skills development, productivity, and motivation. The results obtained from the responses will contribute significantly to answering the third research question posed in this study. This section, part four of the questionnaire, also summarizes student responses to questions 23–32 using a five-point Likert scale (strongly disagree, disagree, neutral, strongly agree, and agree). The results reveal a range of perspectives, reflecting both anticipated benefits and significant concerns about the role of AI tools in academic writing.

Table 3: Perceptions, Concerns, and Over-Reliance

No	Statement	Strongly Disagree	Disagree	Uncertain	agree	Strongly agree
23	AI tools provide useful suggestions for improving the conciseness of my writing.	7 17.5%	4 10%	7 17.5%	12 30%	10 25%
24	I perceive AI tools as highly effective in improving my writing skills.	4 10%	8 20%	5 12.5%	10 25%	13 32.5%
25	I am concerned that over-reliance on AI will weaken my ability to write independently.	4 10%	5 12.5%	8 20%	11 27.5%	12 30%
26	AI tools save me a significant amount of time and effort in completing writing tasks.	4 10%	8 20%	3 7.5%	11 7.5%	14 35%
27	I believe that using AI tools reduces my critical thinking and creativity during the writing process.	2 5%	3 7.5%	5 12.5%	17 42.5%	13 32.5%
28	I prefer receiving personalized feedback from my instructor to automated feedback from AI.	5 12.5%	6 15%	7 17.5%	12 30%	10 25%
29	I have ethical concerns regarding the use of AI tools in academic assignments.	4 10%	6 15%	6 15%	13 32.5%	11 27.5%
30	AI tools provide feedback that is often too general or irrelevant to my specific writing context.	8 20%	3 7.5%	1 2.5%	17 42.5%	11 27.5%
31	I believe that AI tools are essential for success in modern academic writing.	6 15%	5 12.5%	4 10%	11 27.5%	14 35%
32	I am confident in my ability to use AI tools responsibly and ethically.	2 5%	7 17.5%	4 10%	13 32.5%	14 25%

The results, obtained from Table (3), demonstrate that students recognize substantial benefits of AI tools, particularly in improving writing, saving time, and supporting academic success. However, they also express considerable concerns about over-reliance, reduced critical thinking and creativity, ethical issues, and the lack of personalized feedback. Overall, the findings suggest that students view AI as a valuable writing-support tool, but emphasize the need for balanced, responsible, and independent use rather than complete dependence on AI.

Conclusion and Recommendations

Conclusion

This study was conducted with the aim of investigating the impact of artificial intelligence on improving the writing skills of EFL students in a Libyan educational context, specifically the English Department, Faculty of Arts, Alasmarya Islamic University. The findings of this study provide evidence that artificial intelligence tools play an important role in developing the writing skills of EFL students, especially in sentence structure, paragraph organization, and collocation knowledge as well as mechanical and linguistic accuracy. These results are linked to previous studies conducted in other different educational environments, which show that AI-powered writing tools can provide significant feedback that supports the development of EFL writing skills (Wei, Wang and Dong, 2023; Mekheimer, 2025; Hsu, 2026). Furthermore, the results showed that students used effective learning strategies to integrate and apply AI tools into writing tasks to enhance their writing proficiency, which in turn will support their development in writing. Although overall perceptions of AI use in academic writing are positive, the findings also reveal certain concerns among EFL students, particularly regarding the risk of over-reliance. Notably, many students indicated a preference for human feedback over automated feedback, which underscores the complementary—rather than substitutive—role of AI tools in the writing process. This preference suggests that excessive dependence on AI may undermine students' independence, creativity, and critical thinking abilities. In summary, based on the results of this study, the researchers proposed a conceptual model to understand and explain the process of using AI tools to improve the writing skills of EFL students, as illustrated in Figure 5 below.

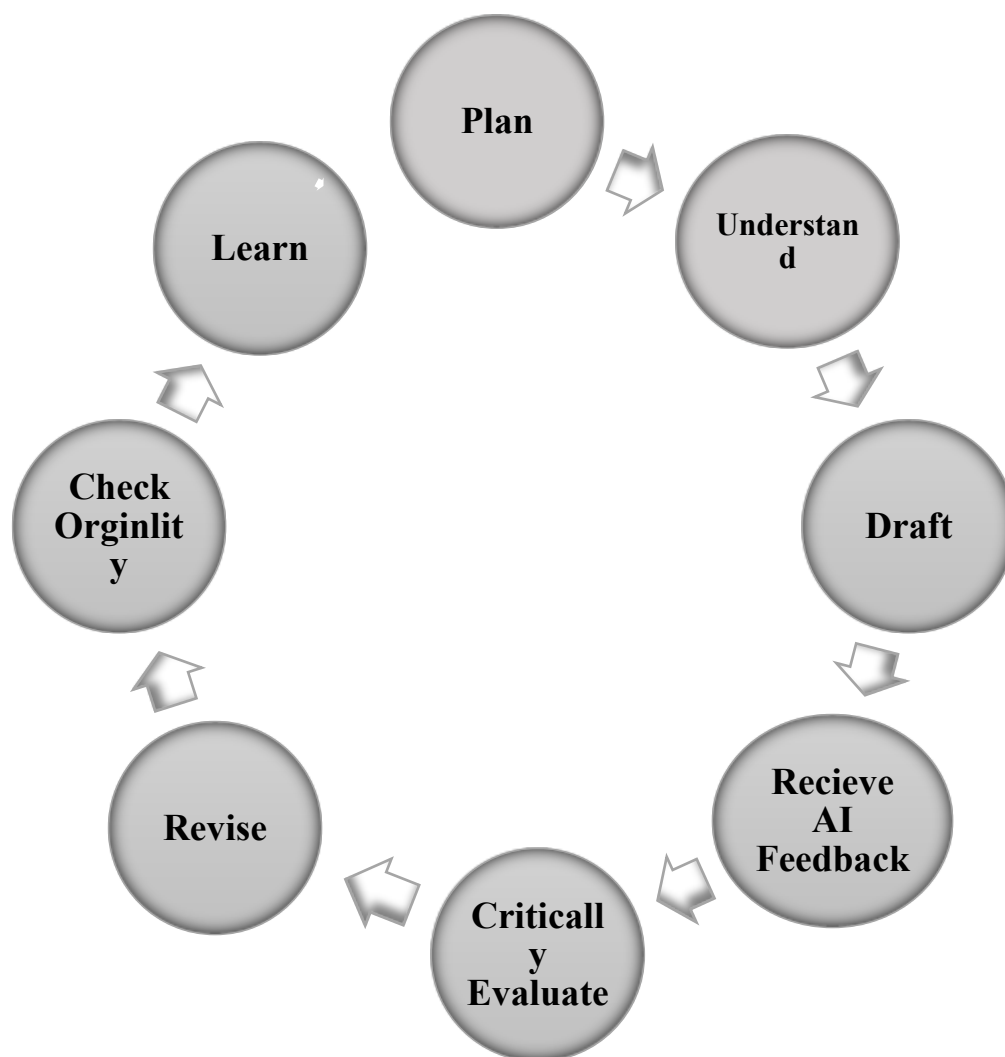


Figure 5: A conceptual model for using AI tools to improve EFL writing skills

Recommendations

In light of the findings of this study, the following recommendations are presented, which the researcher urges all stakeholders in the Libyan higher education sector to implement in EFL educational process. The recommendations are categorized into three groups as follows:

Recommendations for Educators

Teachers should teach students how to use artificial intelligence responsibly, rather than simply prohibiting its use. They can integrate AI into the classroom educational activities and tasks, for example, by requiring students to write a draft themselves first, and then using AI only to check the rules. Teachers should also discuss the issues of academic integrity so students understand that copying from AI does not constitute learning.

Recommendations for Learners

Students should use artificial intelligence as a tutor, not a ghostwriter. The goal is to learn from the mistakes AI detects. Students should try writing down their ideas first and the initial draft independently, and then use the tool to see how they can improve. They should be careful not to let AI do all the thinking, as they still need to exercise their creativity and critical thinking skills to achieve long-term learning.

Recommendations for the Educational Institutions

Universities should organize workshops to teach students and teachers how to use AI tools correctly. It would also be very beneficial for universities to establish clear rules and policies regarding AI. If students know what is permitted and what is not, they can use these tools safely and ethically. Adding "AI literacy" to the curriculum would help students understand the limitations of these technologies. It also provides some useful strategies for more collaborative work to improve the teaching methods and help students gain more benefits from the feedback provided by AI tools.

References:

- Alahmadi, F. (2023). Artificial intelligence in writing development. *World Journal of English Language*, 13(2), 1–12.
- Alangari, T. S. (2025). The effect of AI-assisted learning on EFL writing proficiency: Quasi-experimental and cluster analysis. *Educational Process: International Journal*, 14(1), 7–22.
- Alghasab, M. B. (2025). English as a foreign language (EFL) secondary school students' use of artificial intelligence (AI) tools for developing writing skills: Unveiling practices and perceptions. *Cogent Education*, 12(1), Article 2420530.
- Al-Raimi, M., & Al-Amri, S. (2024). The use of artificial intelligence tools in teaching writing. *Journal of English Language Teaching and Applied Linguistics*, 6(1), 45–60.
- Al-Sofi, B. B. M. A. (2024). Artificial intelligence-powered tools and academic writing: To use or not to use ChatGPT. *Saudi Journal of Language Teaching and Research*, 2(1), 12–25.
- Alzahrani, F. K. J., & Alotaibi, H. H. (2024). The impact of artificial intelligence on enhancing EFL writing skills among high school students. *Journal of Educational and Human Sciences*, 34, 226–240.
- Bae, Y. (2024). The effect of feedback types on learner engagement and writing performance in an EFL context. *English Teaching*, 79(1), 3–25.
- Banawan, M. (2023). The future of intelligent tutoring systems for writing. In I. I. Bittencourt, M. Cukurova, K. Muldner, R. Luckin, & E. Millán (Eds.), *Augmented intelligence and intelligent tutoring systems* (pp. 345–360). Springer.
- Cohen, L., Manion, L., Morrison, K., & Bell, R. (2011). *Research methods in education* (7th ed.). Routledge.
- Dewi, U. (2022). Grammarly as automated writing evaluation: Its effectiveness in improving students' writing accuracy. *Lingua: Jurnal Bahasa & Sastra*, 18(2), 125–138.
- Dizon, G. (2024). A systematic review of Grammarly in L2 English writing: Trends, findings, and implications. *Cogent Education*, 11(1), Article 2397882.
- Du, J. (2024). A systematic review of AI-powered chatbots for English as a foreign language (EFL) learners: Pedagogical roles and research trends. *Computers in Human Behavior*, 153, Article 108236.
- Duong, T. N. A. (2025). An AI chatbot for EFL writing: Students' usage tendencies, perceptions, and writing performance. *The Journal of Educational Research*, 118(1), 112–128.

- Ekizoğlu, M. (2025). The role of AI assisted writing feedback in developing EFL students' writing skills. *Discover Education*, 4, Article 15.
- Fitria, T. N. (2021). Grammarly as AI-powered English writing assistant: Students' alternative for improving writing skills. *Journal of English Language Teaching and Learning*, 2(2), 65–75.
- Hsu, H. L. (2026). Examining the impact of feedback from automated writing evaluation tools on learners' grammar accuracy. *CALICO Journal*, 43(1), 81–107.
- IOSR Journals. (2019). EFL student's writing skills: Challenges and remedies. *IOSR Journal of Research & Method in Education*, 9(6), 66–70.
- Kim, S., & Kim, H. (2022). The effect of AI-based collaborative writing tools on EFL students' writing quality and motivation. *Journal of Educational Technology & Society*, 25(3), 45–58.
- Li, Z., & Hegelheimer, V. (2021). Mobile-assisted language learning: Investigating the effects of AI-based writing feedback on EFL learners' writing performance. *Computer Assisted Language Learning*, 34(5–6), 678–705.
- Liu, C. (2022). Reconceptualizing the impact of feedback in second language writing: An engagement perspective. *System*, 108, Article 100987.
- Lo, C. K., Yu, P. L. H., Xu, S., Ng, D. T. K., & Jong, M. S. (2024). Exploring the application of ChatGPT in ESL/EFL education and related research issues: A systematic review of empirical studies. *Smart Learning Environments*, 11, Article 50.
- Mekhheimer, M. (2025). Generative AI-assisted feedback and EFL writing: A study on proficiency, revision frequency and writing quality. *Discover Education*, 4(1), Article 170.
- Miranty, R. M., & Widiati, U. (2021). Automated writing evaluation (AWE) in higher education: Indonesian EFL students' perceptions about Grammarly use across student cohorts. *Pegem Journal of Education and Instruction*, 11(4), 126–137.
- Nihdatul, P., Maulidiyah, A., Bahijah, I., Wongso, O., Irenes, P. D., Salwa, & Rahmawati, E. (2025). Students' overreliance on AI tools in academic writing. *Journal of English Language Teaching and Literature*, 8(1), 15–28.
- Oewi, T. (2022). *Grammarly as an AI writing support system: A review of the literature*. Liberty University.
- Pohanyar, Q. Z. (2024). Negative effects of AI dependence in writing. *International Journal of Linguistics, Literature and Translation*, 7(3), 55–63.
- Pratama, R. M., & Hastuti, D. P. (2024). Writing skills and grammar development in the AI era. *English Education Journal*, 14(2), 200–215.
- Sharipova, G. S. Q. (2025). Balancing AI use in education: Teachers' and students' perspectives. *Central Asian Journal of Education and Innovation*, 3(1), 45–50.
- Song, H., & Song, M. (2023). Challenges of writing feedback in EFL learning: Teachers' and students' perspectives in the era of AI. *Education and Information Technologies*, 28(9), 11205–11228.
- Stadnik, M., Čošković, A. L., Banko, T., & Ružak, D. (2021). AI tools in language learning: A case study of Croatian students. *Journal of Language and Education*, 7(2), 115–130.

Tran, T. T. H. (2024). The role of writing in English language education in the digital age. *International Journal of TESOL & Education*, 4(1), 88–102.

Wei, P., Wang, X., & Dong, H. (2023). The impact of automated writing evaluation on second language writing skills of Chinese EFL learners: A randomized controlled trial. *Frontiers in Psychology*, 14, Article 1249991.