African Journal of Advanced Studies in Humanities and Social Sciences (AJASHSS)
المجلة الإفريقية للدراسات المتقدمة في العلوم الإنسانية والاجتماعية
Online-ISSN: 2957-5907
Volume 5, Issue 2, 2026
Page No: 186-198
Website: https://aaasjournals.com/index.php/ajashss/index
Arab Impact factor 2025: 0.83 **SJIFactor 2024: 6.856** **ISI 2025: 1.191**

Libyan EFL Student-Teachers' Engagement with Different AI Tools in Academic Writing: Exploring their Usage Purposes and Drivers of Reliance

Entisar Elsherif [1 *], Tymma El-Gammoudi [2]
[1,2] English Department, Faculty of Education Tripoli, University of Tripoli, Tripoli, Libya

تفاعل الطالبات-المعلمات الليبيات المتخصصات في اللغة الإنجليزية كلغة أجنبية مع أدوات الذكاء الاصطناعي في الكتابة الأكاديمية: استكشاف أغراض استخدامهم لها ودوافع الاعتماد عليها

انتصار الشريف [1*]، تيماء القمودي [2]
[2،1] قسم اللغة الانجليزية، كلية التربية طرابلس، جامعة طرابلس، طرابلس، ليبيا

[*]*Corresponding author: e.elsherif@uot.edu.ly*

Received: January 22, 2026	Accepted: April 08, 2026	Published: April 25, 2026

Abstract
Academic writing challenges have driven many EFL students to utilize artificial intelligence (AI) tools into their academic writing process. Review of currently published research showed that studies on the utilization of AI tools in academic writing is expanding. However, studies that explored EFL student-teachers' utilization of AI tools seemed to be limited. Thus, this study aimed to identify the types of AI tools used by Libyan EFL student-teachers in their academic writing process, investigate their primary purposes and frequency of utilization, and explore the driving factors for their reliance on AI tools. Mixed methods design was the chosen research design. The participants were fifty student-teachers who were either taking the Academic Writing course or in the process of writing their graduation research project. Data were collected through focus groups and questionnaires. Data were analyzed quantitatively and qualitatively in two phases: statistical analysis and thematic analysis. Findings revealed that ninety-eight percent of the student-teachers admitted using AI throughout their writing process for various purposes. ChatGPT is the dominant AI tool that was used by 86% of them. Their most frequent uses were for checking spelling and grammar, searching for sources, and paraphrasing and citations. The primary purposes for using AI tools were generating ideas, and enhancing vocabulary and grammar. The factors driving their reliance on AI tools were desire for better grades, time constraints, and reducing plagiarism. These findings invite scholars interested in AI integration into academic writing to investigate student-teachers' successful integration, ethics of integration, and their written final drafts.

Keywords: Artificial Intelligence (AI), AI-Assisted Writing, EFL Academic Writing, Libyan Student-Teachers' Perceptions, Technology Acceptance.

الملخص
دفعت تحديات الكتابة الأكاديمية العديد من طلاب اللغة الإنجليزية كلغة أجنبية إلى استخدام أدوات الذكاء الاصطناعي في الكتابة الأكاديمية، لا سيما في إعادة الصياغة والاقتباس والاستشهاد والمراجع. أظهرت مراجعة الدراسات المنشورة حاليًا تزايدًا ملحوظًا في الدراسات التي تتناول استخدام أدوات الذكاء الاصطناعي في الكتابة الأكاديمية. ومع ذلك، تبدو الدراسات التي تناولت استخدام الطلاب-المعلمين المتخصصين في اللغة الإنجليزية كلغة أجنبية لأدوات الذكاء الاصطناعي محدودة. لذا، هدفت هذه الدراسة إلى تحديد أنواع أدوات الذكاء الاصطناعي التي يستخدمها الطلاب-المعلمين الليبيين المتخصصين في اللغة الإنجليزية كلغة أجنبية في عملية الكتابة الأكاديمية، ودراسة أغراضهم الرئيسية ومدى تكرار استخدامهم لهذه الأدوات، واستكشاف العوامل الدافعة لاعتمادهم الكبير عليها في الكتابة الأكاديمية. اعتمدت الدراسة على منهجية البحث المختلط. وشارك فيها خمسون طالبات-معلمات واللاتي كن إما ملتحقات بمقرر الكتابة الأكاديمية أو في طور كتابة مشروع تخرجهن البحثي. جُمعت البيانات من خلال مجموعات نقاش مركزة واستبيانات، وحُللت كميًا ونوعيًا على مرحلتين: التحليل

الإحصائي والتحليل الموضوعي. وكشفت النتائج أن 98% من الطالبات-المعلمات أقروا باستخدام الذكاء الاصطناعي في جميع مراحل عملية الكتابة لأغراض مختلفة. وكان برنامج ChatGPT هو أداة الذكاء الاصطناعي الأكثر استخدامًا، حيث استخدمه 86% منهن. كانت استخداماتهم الأكثر شيوعًا هي تدقيق الإملاء والقواعد، والبحث عن المصادر، وإعادة الصياغة والاستشهادات. أما الأهداف الرئيسية لاستخدام أدوات الذكاء الاصطناعي فكانت توليد الأفكار، وتحسين المفردات والقواعد. ومن العوامل التي دفعت إلى الاعتماد على هذه الأدوات الرغبة في الحصول على درجات أفضل، وضيق الوقت، والحد من الانتحال. تدعو هذه النتائج الباحثين المهتمين بدمج الذكاء الاصطناعي في الكتابة الأكاديمية إلى دراسة نجاح الطلاب-المعلمين في دمج هذه الأدوات، وأخلاقيات هذا الدمج، ومسوداتهم النهائية المكتوبة.

الكلمات المفتاحية: الذكاء الاصطناعي، الكتابة بمساعدة الذكاء الاصطناعي، الكتابة الأكاديمية باللغة الإنجليزية كلغة أجنبية، أراء الطلاب-المعلمين الليبيين، تقبل التكنولوجيا.

Introduction

One of the crucial skills for EFL university students is academic writing, as mastering this formal mode of written communication leads to their success in university and their future career. In academic writing, EFL students are expected to write "clear, focused, [and] structured" texts that are "supported by relevant evidence and references" to present a logical argument [1]. It is the "formal style of writing" that is "used by university students, instructors, and researchers" [2]. Academic writing differs from other forms of writing in that it entails students communicating in clear and structured writing in which they incorporate evidence using their critical thinking skills and the sources they gathered while they were searching for relevant information. Thus, the rationale for including academic writing courses in TEFL programs is to train EFL students in essay and research writing, as they are the aegis of academic writing [3]. In academic writing courses, EFL students learn how to add quotes and in-text citations to support their views and acknowledge other researchers' work. They also learn how to paraphrase others' ideas using their own voice. They learn about referencing styles using one of the referencing styles such as the American Psychological Association (APA), Modern Language Association (MLA), or Harvard style [4, 5].

Research findings revealed that there are several challenges encountered by EFL undergraduate students in academic writing in general and more specifically in incorporating sources [6, 7, 8]. In the Libyan context, published research findings show that, like their EFL peers around the world, Libyan EFL undergraduates face different challenges in academic writing. They not only have grammatical and spelling issues but also have mechanistic and syntactical issues in paraphrasing, quoting, citing, and referencing that would make avoiding plagiarism challenging for them [9, 10, 11, 12, 13, 14, 15].

To overcome their challenges, many EFL undergraduate students choose to utilize artificial intelligence (AI) to assist them in academic writing [16]. AI-assisted writing refers to texts produced by EFL students "with the support of generative or corrective AI technologies, whether for content generation, paraphrasing, linguistic correction, or stylistic refinement" [17]. AI tools that were used by EFL students ranged to include text and multimodal generative AI models, drafting support tools, grammar checkers, paraphrasing engines, citation managers, assessment tools, translation tools, language practice tools, AI tutoring style systems, and originality checkers [16, 18, 19, 20]. AI tools help the students in generating ideas, provide linguistic scaffolding that would support them in writing complex tasks, offer immediate feedback, and enhance their writing [16,18]. Thus, the EFL students' utilization of generative AI tools and AI-powered writing tools has reshaped how EFL students approach their writing tasks [18, 20]. According to Bin Dahmash [21], EFL students adopt two distinct approaches for academic writing while using AI tools: the comprehensive, process-oriented approach and the product-oriented approach. In the process-oriented approach, they used AI tools to refine their written texts throughout the various stages of academic writing process, whereas in the product-oriented approach they relied on AI tools to generate their academic texts and then utilize the AI Humanizer feature.

AI tools can be classified into five functional categories that align with academic writing processes, which are Large Language Models (LLMs), AI-Powered Writing Assistants, Plagiarism and AI Detector Tools, Academic Research and Discovery tools, and AI Agents and Workflow Tools. To begin with, LLMs, such as *ChatGPT* and *Gemini*, are models that are mostly utilized for idea generation, thoughts organizing, and text summarization and paraphrasing to facilitate the students' writing process [22, 23]. Secondly, AI-Powered Writing Assistants, such as *Grammarly* and *Quillbot*, are tools that refine the students' grammar, spelling, punctuation, and writing styles, which enhance the quality and accuracy of the students' writing [22, 23]. In addition, Plagiarism and AI Detector Tools, such as *Turnitin*, *GPTZero*, *Quillbot*, and *Grammarly*, help the students check their texts' originality and maintain integrity [22]. These tools assist them in avoiding plagiarism and help them detect AI-generated texts. Furthermore, AI-powered academic research and discovery tools, such as *Consensus* and *Elicit*, are AI search tools that provide assistance in finding sources, offer specific answers to their questions, present a concise synthesis, retrieve information from articles, and give explicit attribution to sources [23]. Finally, AI tools known as AI Agents and Workflow tools assist students in conducting systematic reviews and managing citations

[23]. Thus, there is a need to inform students on how these tools can be used without infringing academic ethics [24, 25].

Recently published research review revealed that research on AI in higher education is expanding rapidly. Student-focused work, classroom-based research, and systematic reviews from different contexts were covered in published studies representing global institutional and professional perspectives. Nevertheless, studies exploring AI-tool usage in academic writing in EFL contexts can be considered "limited" or "uneven" in certain areas [19, 26].

Research findings reported that EFL students used different types of AI tools. *ChatGPT*, *Claude*, *Grammarly*, *QuillBot*, *Zetero*, *GPTZero*, and *Turnitin* were reported as the most utilized AI tools by EFL students [16, 18, 20]. The review revealed that there is an extensive focus on one AI tool that is *ChatGPT*. Researchers examined *ChatGPT* and academic writing self-efficacy, its effectiveness, its capabilities in spotting and analyzing writing errors, its feedback vs. instructor feedback, its feedback vs. Automated Writing Evaluation (AWE) systems, and EFL learners' interactions with *ChatGPT* [20, 27, 28, 29]. Besides, while some researchers explored how AI paraphrasing tools were utilized by EFL students [18, 26], other researchers focused on how EFL students used AI-powered citation management tools [30, 31].

Furthermore, the primary purposes for using AI tools as covered through empirical findings were idea generation, vocabulary enhancement, grammar correction, paraphrasing, and revision and editing [16, 18, 20]. Findings also showed that EFL students utilized AI tools during the writing process for planning and creating drafts; revision phases; and for humanizing their AI-generated texts to enhance them and make them seem as human-written texts [32]. Besides, findings revealed multiple factors that drove EFL students' reliance on AI tools. These factors included perceived effectiveness, user-friendliness, time constraints, linguistic insecurity, inadequate institutional support, and writing self-efficacy [18, 20, 33].

Even though there is an expanding body of research on AI-assisted writing, current research review showed that research on EFL student-teachers is still limited. Understanding this population's AI-powered writing practices is significant, as they not only use AI tools to enhance their academic writing themselves but also will be teaching academic writing to their learners as future EFL writing teachers. The review showed that multiple empirical studies were conducted in various higher education contexts, including Algeria, China, India, Iraq, Malaysia Morocco, Philippines, Saudi Arabia, Slovakia, UAE, Ukraine, and Vietnam. Alzubaidi [19] recommended investigating AI utilization "within multilingual, culturally diverse, and often under-researched educational settings, where institutional readiness, policy development, and teacher support remain uneven" (p. 3). The Libyan higher education context can be considered as an under-researched educational setting where AI-related policies, universities' readiness, and teacher support are still deficient. Additionally, there appears to be a limited number of studies that explored the types of AI tools utilized by EFL student-teachers, their purposes for using them, and the factors driving them to rely on AI tools for specific tasks in academic writing.

Published research showed that the expanding interest in research on AI integration in Libyan higher education is more focused on the professors' and postgraduate students' usage and perceptions [34, 35, 36, 37]. Only few studies were found that focused on Libyan EFL undergraduate students' usage and perceptions of AI integration. For instance, Msimeer [38] conducted a quantitative study that investigated Libyan EFL university students' usage of *ChatGPT* for English language learning. Seventy-one undergraduate and postgraduate students of the University of Misurata and Libyan Academy in Misurata participated in the study. Data were gathered through online questionnaires and were analyzed quantitatively. Her results revealed that 81.4% of them admitted using AI-powered chatbots in English learning. Frequency of AI usage results showed that 48% of them chose "Sometimes". Eighty-seven percent of the students admitted using *ChatGPT* for English language learning and they used it for finding answers, translation, and summarizing long texts. The participants of Msimeer's study believed that *ChatGPT* improved their language learning. In a more recently published study, Elsaadi [39] conducted a quantitative study that investigated Libyan EFL students' perceptions of AI usage for language learning. The participants were undergraduate students of the department of English at Sirte University. Data were collected through online questionnaires and were analyzed quantitatively. The results showed that the participants had positive perceptions and that they used AI tools frequently. They used *ChatGPT* and *Google Translate* frequently as writing assistants, for translation, for checking grammar, and for enhancing their vocabulary. They reported facing a number of challenges that included AI outputs accuracy, automated feedback clarity, and over-reliance negative effects.

As the reviewed studies did not focus on student-teachers, there is a need for studies that explore the Libyan EFL student-teachers' usage of AI tools. Thus, we believe it is essential to identify the types of AI tools Libyan EFL student-teachers utilize and understand their purposes of AI tool usage and what drives them to rely on AI tools in specific academic writing tasks. This study addressed the gaps in the literature and aimed to achieve the following research objectives:

1. Specify the types of AI tools Libyan EFL student-teachers utilized into their academic writing process.
2. Investigate the Libyan EFL student-teachers' primary purposes and frequency of utilizing AI tools in academic writing.

3. Explore the factors drove Libyan EFL student-teachers' reliance on AI tools in academic writing.

To achieve these three objectives, the following research questions were raised:

1. Which types of AI tools do Libyan EFL student-teachers utilize in their academic writing process?
2. What are the primary purposes and frequency of utilizing AI tools of Libyan EFL student-teachers in academic writing?
3. What are Libyan EFL student-teachers' driving factors for reliance on AI tools in academic writing?

The study is of significance as it not only fills the gap in the literature, but also provides empirical data results and recommendations that would pave the road for interested educators and researchers. For educators, it provides them with data that help them understand their student-teachers' AI-related practices whereas for the researchers it opens doors for future research ideas.

Material and methods

This study is grounded in the Technology Acceptance Model (TAM) [40], sociocultural theory [41], and mediated learning. TAM provides an explanation of AI utilization that is shaped by the perceived usefulness and ease of use. AI tools help EFL students to achieve their writing goals through Vygotsky's Zone of Proximal Development (ZPD). This is by acting as mediating tools that bridge the gap between what the students can achieve by themselves and what they can achieve with the AI tools' help. Mediated learning perspectives position AI tools either as scaffolding resources or tools that supplant cognitive engagement. Accordingly, AI tools are considered meditational resources that are divided into supporting tools and replacing tools.

Mixed methods explanatory sequential design was chosen to identify the types of AI tools utilized by the Libyan TEFL student-teachers, the primary purposes and frequency of utilizing AI tools, and the factors driving them to these AI tools during specific tasks of the academic writing process. This design was chosen to create a whole understanding of the student-teachers' utilization of AI tools during their academic writing process [42, 43].

The site of the study is the English language department at a Libyan public university. One of the twelve programs offered at the Faculty of Education is the TEFL teacher education program that aims to prepare future English language teachers. The program offers fifty-seven courses with a total of 134 credits. The student-teachers take six writing courses that aim to develop their creative and academic writing. Three of these courses focus on enhancing the student-teachers' academic writing skills, which include *Writing 3*, *Academic Writing*, and *Graduation Project Writing*. These courses develop their writing skills to be able to conduct and write one of the program's exit requirements, which is the *Graduation Research Project*.

The target population was the student-teachers who were taking one of the advanced writing courses and the student-teachers who were in the graduation research project stage. To gain rich data and in-depth insights, purposive sampling was used to select the participants. Fifty student-teachers participated in the study. They were considered the most fit for the study, as they were engaged in academic writing regularly. They were either writing their graduation projects or were being trained to learn how to write academically. As the Faculty of Education is a females-only institution, all the participants were female student-teachers.

Data were collected through focus groups and questionnaires. Focus groups were first used to help in forming the questionnaire questions and then to find explanations for some of the results. Twenty-five of student-teachers participated in the focus group sessions. Questionnaires were used to gather statistical data to identify the types of AI tools they used, their purposes for using them, and the factors drove them to AI tool utilization in specific tasks of academic writing. Fifty student-teachers participated in the questionnaire.

Data collection procedures were in three phases. Phase 1 began with focus group session in which the student-teachers were asked about why they used AI tools and the driving factors. The session was conducted online via the Telegram group feature. As gathering the student-teachers for face-to-face sessions was difficult because they were busy with attending lectures and taking exams or busy with practicum, a group was created on Telegram, and the participants who agreed to participate in the focus group sessions were invited to join the group. To ensure the student-teachers' privacy and anonymity, the group included only the student-teachers who joined willingly to participate in the study. Their responses helped in forming the questionnaire. Phase 2 highlighted the construction and the distribution of the questionnaire. The first section of the questionnaire gathered the student-teachers' demographic information. Each of the other three sections of the questionnaire was devoted to one of the research questions. The questionnaire included nine close-ended questions. It was designed and distributed via Microsoft Forms to ensure that all the participants were student-teachers enrolled in the English Language department as they had to use their university email address to access the questionnaire. In Phase 3, another focus group session was conducted to understand some of the student-teachers' responses.

Data were analyzed quantitatively and qualitatively in phases. Quantitative data were analyzed using Microsoft Excel 2010 and Julius AI [44]. In the second phase, data were analyzed qualitatively both by the researchers and using Formula Bot [45] to make sure that the researcher's analysis is not biased. Julius AI [44]

and Formula Bot [45] are AI-powered data analysts that utilize advanced language models to interpret data and produce precise and accurate results. The following sections present the research findings.

Results

This study aimed to identify the types of AI tools used by Libyan EFL student-teachers, the primary purposes and frequency of AI tool utilization, and the factors driving student-teachers' reliance on AI tools. The following sections present the findings based on their relevance to the raised research questions.

Types of AI Tools Used by Libyan EFL Student-Teachers

The first research question inquired about the types of AI tools the Libyan student-teachers used during their academic writing process. To answer this research question, two questions were included in the second part of the questionnaire. The first question was a YES/NO question that aimed to identify whether or not the student-teachers utilized AI tools during their academic writing process. The second question was a select all that apply question that aimed to identify the specific AI tools the Libyan EFL student-teachers used during their academic writing process. Descriptive statistical analysis was utilized first and then further analysis included categorization of the used AI tools by technological type and the number of AI tools used per user and user profiles with the aim of providing a comprehensive overview of usage.

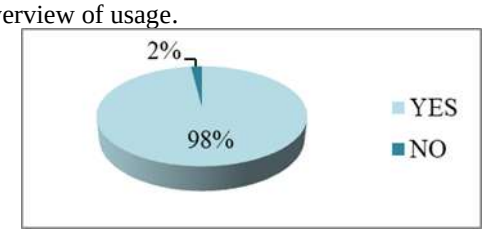

Figure 1. Libyan FFL Student-teachers' Utilization of AI tools in Academic Writing

When the student-teachers were asked whether or not they used AI tools during their academic writing process, data analysis revealed a tremendously high utilization rate. The percentages show a near-universal adoption rate as out of the fifty participants, only one student-teacher reported not using AI tools during their academic writing process. As shown in Figure 1, ninety-eight percent of the participants (49 participants) chose YES confirming that they utilized AI tools during their academic writing process.

Table 1. Types of AI Tools Used by Libyan Student-teachers

Rank	AI Tool	Number of Responses	Percentage
1	ChatGPT	43	86%
2	Grammarly	22	44%
3	Gemini	21	42%
4	QuillBot	19	38%
5	Poe	12	24%
6	DeepSeek	10	20%
7	Copilot	7	14%
8	Grok Manus	1 1	2% 2%

The second question asked the student-teachers to choose the AI tools they utilized from a suggested list of AI tools. They were given 15 options to choose from: fourteen commonly used AI tools and the option of "Other" to encourage them to mention the AI tools they used that were not mentioned in the suggested list. The fourteen AI tools the student-teachers were asked to choose from included the following most known AI tools: *ChatGPT*, *DeepSeek*, *Gemini*, *Poe*, *Copilot*, *Quillbot*, *Grammarly*, *Qwen*, *Grok*, *Manus*, *Elicit*, *Fixy*, *Proofreader*, and *PaperPal*.

ZeroGPT was revealed as OTHER tools used by one of the participants (ST29). However, this response was excluded because the respondent reported not using AI tools in the first question. As can be seen in Table 1, only nine of the provided list of fourteen AI tools were reported to be utilized by Libyan EFL student teachers. The results can be grouped into five groups: the widely adopted tools, the frequently used tools, the less commonly used tools, tools used by a single respondent, and the unused AI tools.

ChatGPT is the predominant AI tool among the Libyan EFL student-teachers as it is used by 86% of them. The frequently used AI tools include *Grammarly* (44%), *Gemini* (42%), and *QuillBot* (38%). The third group included the AI tools with low adoption among the participants that involved *Poe* (24%), *DeepSeek* (20%), and *Copilot* (14%). The fourth group included the AI tools that were used by only one student-teacher, which are

Grok (ST1), and *Manus* (ST1). Five of the suggested AI tools that received zero responses are included in the unused AI tools group, which include *Qwen*, *Elicit*, *Fixy*, *Proofreader*, and *PaperPal*.

When the student-teachers were asked to explain why they seemed to prefer ChatGPT over other AI tools, they explained that they preferred ChatGPT because they were "familiar with using it more than the other tools" (ST1, 2025). They also found it "much easier" than the other tools and they thought that it "understands what [they] want specifically" (ST3, 2025). One of the student-teachers explained that it was "the easiest one to deal with" and that she liked the "voice message feature" that prevented her from having "to type forever" and ended by stating that she thought "most students prefer it too because it is simple, flexible, and it understands what [they] want" (ST5, 2025).

Another analysis was conducted to classify the AI tools utilized by the Libyan EFL student-teachers according to their technological type for deeper understanding of the landscape of AI tool adoption among them. Accordingly, the used AI tools were classified into four categories in accordance with their primary functions: Large Language Models (LLMs), AI-Powered Writing Assistants, Plagiarism & AI Detector Tools, and AI Agents / Workflow Tools.

The results revealed that LLMs are the most utilized technological type among the student-teachers. They included *ChatGPT*, *Gemini*, *Poe*, *DeepSeek*, *Copilot*, and *Grok*. The second widely used AI tools can be considered as both AI-Powered Writing Assistants and Plagiarism & AI Detector Tools. This is because forty-one student-teachers reported using *Grammarly* and *QuillBot*. Hardly Surprising, results showed lower usage rates of the more specialized technological types among the student-teachers as *Manus*, an AI Agent, was only used by one student-teacher. These data results reveal that the student-teachers utilized AI tools through three AI functional areas: content generation, language polishing, and integrity checking.

As data revealed that many student-teachers chose a number of AI tools from the suggested list, it was significant to identify the number of AI tools used per user/student-teacher. Accordingly, the number of AI tools used by each of the student-teachers was calculated. Descriptive statistics revealed that the mean number of tools used was 2.9 tools per user. The minimum number of AI tools used per user was one tool whereas the maximum number of AI tools used per user was seven. The most frequent number of AI tools was three. Likewise, the median number of AI tools was three. Seventy-four percent of the student-teachers reported simultaneous utilization of diverse AI tools, which showed that a significant majority of the student-teachers utilized multiple AI tools. Accordingly, a final phase of analysis was conducted to identify patterns of AI tool integration through a cluster analysis on the specific AI tool combinations the student-teachers reported using.

The findings revealed distinct user profiles that represent a range from dependency on a single-tool to utilization of complex multi-tools. So, the profiles were categorized into five groups of users: the Minimalist, the Dual-Tool user, the Balanced user, the Power user, and the Super user.

- In the Minimalist user profile, the student-teachers showed dependency on a single LLM by using only *ChatGPT*, only *Poe*, or Only *Gemini*, no other AI tools.
- In the Dual-Tool user profile, student-teachers combined a generator and a refiner. They paired an LLM with either another LLM or a writing assistant in five combinations: *ChatGPT + Deepseek*; *ChatGPT + Gemini*; *ChatGPT + QuillBot*; *ChatGPT + Grammarly*; and *Copilot + DeepSeek*.
- In the Balanced user profile, which is the most common profile, the student-teachers optimal combination of three different AI tools. This advanced integration of AI into writing process included seven combinations: *ChatGPT + Poe + Gemini*; *ChatGPT + QuillBot + Deepseek*; *ChatGPT + QuillBot + Gemini*; *ChatGPT + Grammarly + Gemini*; *ChatGPT + QuillBot + Grammarly*; *ChatGPT + Poe + QuillBot*; and *ChatGPT + Poe + Gemini*.
- In the Power user profile, the student-teachers employed four different AI tools in four combinations: *ChatGPT + QuillBot + Deepseek + Gemini*; *ChatGPT + QuillBot + Grammarly + Gemini*; *ChatGPT + QuillBot + Grammarly + Poe*; and *ChatGPT + Grammarly + Gemini + Copilot*.
- Finally, in the Super user profile, the student-teachers employed five or more tools. They used multi-model AI platforms and specialized AI Agents tools to create their distinct 5-tool, six-tool, or 7-tool combinations. The 5-tool combination were in three combinations that include: *ChatGPT + Poe + Grammarly + Gemini + Copilot*; *ChatGPT + Poe + QuillBot + Grammarly + Gemini*; and *ChatGPT + QuillBot + Grammarly + Gemini + Copilot*. The 6-tools combination included: *ChatGPT + Poe + QuillBot + Grammarly + Gemini + Copilot*. The 7-tool combination included: *Poe + Grammarly + Gemini + Copilot + Grok + Manus + Deepseek*. As can be seen, this user profile can be considered as the most diverse toolkit.

Primary Purposes and Frequency of AI Tools Utilization

The second research question inquired about the Libyan EFL student-teachers' primary purposes and frequency of utilizing AI tools in academic writing. To answer this research question, six questions were included in the third part of the questionnaire. Three questions were five-point Likert scale: Never, Rarely, Sometimes, Frequently, and Always. They aimed to investigate student-teachers' frequency of AI tool usage. The fourth and

the fifth questions were select all that apply questions that aimed to identify the student-teachers' purposes of using AI tools during their academic writing process. The final question was a YES/NO question that aimed to identify whether or not the student-teachers cross-checked AI suggestions with non-AI resources when using AI tools for academic writing. Descriptive statistical and thematic analysis was conducted to answer the questions.

Table 2. Frequency of AI Tool Usage in Academic Writing

Frequency	Overall Use for Academic Writing	Use for Paraphrasing	Use for Quoting / Citing / Referencing
Never	0%	0%	0%
Rarely	0%	14.3%	8.2%
Sometimes	40.8%	34.7%	30.6%
Frequently	38.8%	34.7%	53.1%
Always	20.4%	16.3%	8.2%
Mean	3.80	3.53	3.61
SD	0.76	0.93	0.75

Three questions were devoted to determine how frequently the student-teachers utilized AI tools into their academic writing. They were asked to rate their frequency of use on a five-point Likert scale for general use of AI tools during academic writing, use of AI tools for paraphrasing, and use of AI for quotations, citations, and referencing. Notably, as illustrated in Table 3, no student-teacher reported Never using AI tools in general use of AI tools during academic writing, use of AI tools for paraphrasing, and use of AI tools for quotations, citations, and referencing.

Data showed that the overall frequency of AI tools use for academic writing was high with a mean score of 3.80 (SD = 0.76). As the student-teachers gave zero responses for Never and Rarely, the results show that their utilization of AI tools was essential to them since nearly 60% of them reported using AI tools frequently (38.8%) or Always (20.4%). The scores of student-teachers who reported that they Sometimes (40.8%) used AI tools further underscores this idea.

When it comes to the frequency of using AI tools for specific writing tasks: paraphrasing, quoting, citing, and referencing, the student-teachers reported using AI tools for paraphrasing, quoting, citing, and referencing with a wide variability in individual practices. The frequency responses of using AI for paraphrasing yielded a mean score of 3.53 (SD = 0.93). The student-teachers responses were spread across Rarely (14.3%), Sometimes (34.7%), Frequently (34.7%), and Always (16.3%). The student-teachers' average frequency of AI tools usage for quoting, citing, and referencing revealed was 3.61 (SD = 0.75). Their responses revealed that 53.1% of them used AI tools frequently for quoting, citing, and referencing whereas 30.6% of them chose "Sometimes" as their frequency of using AI tools frequently for quoting, citing, and referencing. The other responses were spread across Rarely (8.2%) and Always (8.2%).

Table 3. Using AI Tools During the Academic Writing Process

Academic Writing Process Stage	Responses	Percentage
Revising/Editing: Checking for spelling and grammar mistakes.	33	67.3%
Prewriting: Searching for sources.	30	61.2%
Drafting: Paraphrasing, summarizing, quoting, and citing.	24	49.0%
Drafting/Revising: Choosing the most appropriate words.	24	49.0%
Revising/Editing: Checking for plagiarism and AI-generated text.	22	44.9%
Drafting/Revising: Creating references list.	21	42.9%
Prewriting: Brainstorming ideas.	14	28.6%
Drafting: Writing sentences/paragraphs/essays.	14	28.6%
Other	0	0.0%

The following question aimed to specify the precise stages of academic writing in which AI tools were used. The student-teachers were asked to select all the steps in which they used AI tools from a provided list. Data revealed a high degree utilization AI tools across academic writing process stages as student-teachers' responses reported using AI tools in 3 to 4 stages (Mean = 3.22). Their responses revealed that the top stages in which they used AI tools for checking for spelling and grammar mistakes (67.3%) and for searching for sources (61.2%). They also used AI tool for paraphrasing, summarizing, quoting, and citing (49.0%); choosing the most appropriate words (49.0%); checking for plagiarism and AI-generated text (44.9%); and creating references list (42.9%). The lowest number of responses was fourteen and was tied between brainstorming ideas and writing sentences/paragraphs/essays.

A final analysis was conducted by categorizing the stages into groups for a better understanding of student-teachers practices. This revealed that the student-teachers used AI tools in the prewriting, drafting, and polishing stages. In the prewriting stage, they used AI tools for idea generation and finding sources. In the drafting stage, they used AI tools for paraphrasing, choosing appropriate words, and referencing. In the polishing stage, they used AI tools for checking spelling and grammar and then for detecting plagiarism.

The fourth question aimed to identify the student-teachers' purposes for AI-tool utilization into their academic writing. In this question, the student-teachers were asked to select all the purposes that applied to them for using AI tools from a provided list. Their responses were analyzed in two phases: descriptive statistical analysis and thematic categorization of purposes. As evidenced in Table 3, the findings revealed that the student-teachers' primary purposes for using AI tools in academic writing were generating ideas (57.1%) and enhancing their vocabulary and grammar (53.1%), whereas the least reported reason was overcoming writer's block (10.2%).

Table 4. Purposes for Using AI Tools During the Academic Writing Process

Purpose	Response	%
To generate ideas.	26	53.1%
To enhance my vocabulary and grammar skills.	26	53.1%
To search for relevant and reliable sources.	24	49.0%
To save time in the writing process.	21	42.9%
To use quotations and citations correctly.	19	38.8%
To create the appropriate references list.	18	36.7%
To receive instant feedback and improve my writing.	18	36.7%
To improve my confidence in writing in English.	16	32.7%
To paraphrase correctly.	15	30.6%
To understand the writing styles and write according to the assignment instructions.	14	28.6%
To be able to meet the teachers' deadlines.	13	26.5%
To overcome the writer's block.	5	10.2%
Other	0	0.0%

The findings were stratified into three levels of frequency according to the student-teachers' selections for a more nuanced interpretation: high usage frequency, moderate usage frequency, and low usage frequency. The purposes that were selected by more than twenty participants were categorized in the high usage category as the primary purposes for AI utilization. Student-teachers reported their purposes for AI usage as idea generation (57.1%, n = 28), linguistic improvement (53.1%, n = 26), research efficiency (46.9%, n = 23), and time management (42.9%, n = 21). The second category included purposes with selection rates that ranged between 30% and 39% as the moderate usage frequency. In this category, student-teachers reported six purposes for using AI tools in academic writing that are related to technical accuracy (paraphrasing, quotations, and citations) and personal development (confidence and feedback). The final category is the low usage frequency, which represents the least reported purposes (below 15 responses). The least reported list of purposes included meeting the teachers' deadlines (24,5%, n = 12), and the rarely considered as a driving purpose that is overcoming the writer's block (10.2%, n = 5).

In the thematic categorization of AI tools usage purposes phase, the twelve purposes were thematically grouped into four related categories for a deeper understanding of the student-teachers' behavior. The four categories are: Academic Documentation & Integrity, Linguistic Proficiency & Skill Development, Cognitive Support & Idea formation, and Pragmatic Efficiency. Thematic categorization of AI tools usage purposes revealed that the dominant category was Academic Documentation & Integrity with 90 selections (44.1%). The specific items included searching for relevant and reliable sources, using quotations and citations correctly, creating references list, paraphrasing correctly, and understanding writing styles. Linguistic Proficiency & Skill Development emerged as the second dominant category with 58 selections (28.4%). It included enhancing vocabulary and grammar, receiving instant feedback, and improving student-teachers' confidence. Finally, two categories included the same number of selections: Cognitive Support and Idea Formation with 33 selections (16.2%) and Pragmatic Efficiency with 33 selection (16.2%). As they are integral parts of the cognitive process of writing, generating ideas and overcoming writer's block were considered among the Cognitive Support & Idea formation category. In the final category, saving time and meeting teachers' deadline were included in the Pragmatic Efficiency category as they fit its meaning.

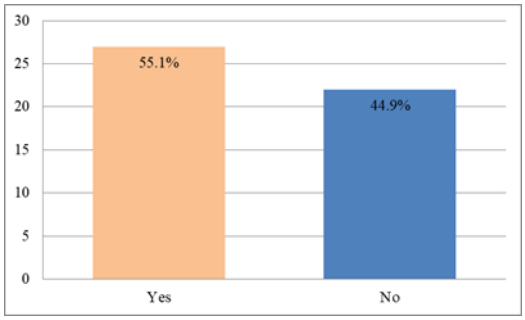

Figure 2. Libyan FFL Student-teachers' Checking AI Suggestions

The final question was a YES/NO question that aimed to check whether or not the student-teachers cross-checked AI suggestions with non-AI resources when using AI tools for academic writing. As can be seen in Figure 2, while slightly more than half of the student-teachers reported that they cross-checked AI suggestions with non-AI sources, a considerable portion of student-teachers (44.9%, n = 22) admitted that they do not cross-check AI suggestions.

To understand how the student-teachers cross-check AI suggestions, they were asked to explain how they checked AI suggestions using non-AI resources. They reported checking AI suggestions by using online search engines and their textbooks. They reported that they either search Google, check Google Scholar, or read trusted articles published on trusted websites to make sure that AI suggestions were credible. As one of the student-teachers explained, they "look for original sources to make sure the information is accurate" (ST21, 2025). They usually check for the accuracy and validity of AI suggestions by check search engines and academic search engines to check whether the articles titles, authors names, and the journal names to make sure that they were not fabricated by AI. The student-teachers also reported using their textbooks to ensure the accuracy of AI suggestions.

Factors Driving Student-Teachers' Reliance on AI Tools

The third research question explored the factors drove Libyan EFL student-teachers' reliance on AI tools for specific academic writing tasks: paraphrasing, quoting, citing, and referencing. To answer this research question, a "select all that apply" question was included in the fourth part of the questionnaire. It included 13 statements and the option of Other to add any factors that were not in the suggested list.

Descriptive statistical analysis revealed that the dominant factors were desire for better grades (53.1%); time constraints (51.0%); and student-teachers' beliefs in accuracy and plagiarism reduction (49.0%). In the middle range, skills-related factors appeared as motivators for using AI. These included difficulty in applying style guides (40.8%); lack of understanding of academic conventions (34.7%); lack of confidence (32.7%); and language proficiency assistance (28.6%). The third group of factors is related to student-teachers' experience, access, and social influence. This included previous positive experiences (22.4%); access to technology (20.4%); and recommendations from peers or instructors (18.4%). The least number of responses was to factors that included the student-teachers' uncertainty about how to properly cite a less common or new type of source, such as podcast, social media post, AI model (14.3%); peer influence (10.2%); and the need for instant feedback (2.0%) that was added by one of the student-teachers.

Table 5. Factors Drove Student-Teachers for Using AI Tools

Factors	Responses	%
Desire for better grades and academic performance.	26	53.1%
Time constraints due to heavy workloads and tight deadlines.	25	51.0%
The belief that AI tools will be more accurate reducing the risk of committing plagiarism.	24	49.0%
Difficulty remembering or accurately applying complex and specific rules of the required style guide (e.g., APA, Chicago, MLA).	20	40.8%
Lack of/Difficulty in understanding of academic writing conventions.	17	34.7%
Lack of confidence in my writing skills.	16	32.7%
Need for assistance with language proficiency.	14	28.6%
Previous positive experiences with AI tools.	11	22.4%
Access to technology and user-friendly AI tools.	10	20.4%
Recommendations from peers or instructors.	9	18.4%
Uncertainty about how to properly cite a less common or new type of source (e.g., podcast, social media post, AI model).	7	14.3%
Peer influence and trends in technology use.	5	10.2%
Other (The need of instant feedback)	1	2.0%

Discussion

The aim of this study was to investigate the Libyan EFL student-teachers' utilization of AI tools in academic writing. The purpose was to identify the types of used AI tools, the purposes and frequency of usage, and the driving factors. The results align with the existing research findings in the consensus that EFL students utilize AI nearly in all of the stages of academic writing process. They preferred to utilize AI tools for the tools' user-friendliness and for their support.

Types of AI Tools Used by Libyan EFL Student-Teachers

The results revealed high rate of AI utilization. *ChatGPT* was the most utilized AI tool among the Libyan EFL student-teachers. The other AI tools the student teachers reported using included Grammarly, Gemini, QuillBot, Poe, DeepSeek , and Copilot. Four technological types of AI tools were used by the student-teachers that were categorized as LLMs, AI-Powered Writing Assistants, Plagiarism & AI Detector Tools, and AI Agents / Workflow Tools. The most major finding that emerged from data analysis was how the student-teachers mostly used AI tools as personalized toolkits. The number of AI tools they utilized ranged from using a dual-tool approach to a complex combination of tools that ranged between using three tools to using seven tools. The average student-teacher utilized three AI tools. They tended to combine LLMs with AI-Powered Writing Assistants, Plagiarism & AI Detector Tools, and/or AI Agents / Workflow Tools. This suggests that the student-teachers were not passive users of AI tools. They thoughtfully choose AI tools and built digital toolkits that assisted them throughout the different writing tasks and processes.

The results of this study align with the existing research findings in the consensus that EFL students utilize mostly *ChatGPT* in academic writing [20, 26, 27, 28]. They also mostly used LLMs with other AI tools. In addition, our study findings add to the existing literature the AI-tool combinations the participants used throughout the academic writing process. The student-teachers reported using various combinations of AI tools that can be described as toolkits that helped them navigate different tasks in academic writing. The user profiles signified the student-teachers' strategic approach to academic writing in which they combined distinct AI tools with complementary functions.

Primary Purposes and Frequency of AI Tools Utilization

The results showed that AI tools usage among Libyan EFL student-teachers is widespread and that AI tools are frequently utilized for revisions, paraphrasing, and citation management. Their primary purposes for AI utilization cognitive, technical, and improvement and confidence. They relied greatly on AI tools for revising and editing and finding sources and less for generating ideas and drafting. Thus, the findings reveal that the student-teachers strategic approach of AI tool utilization is revision-heavy, which means maintaining overall authorship while using AI tools for support, not as replacement. Thus, the findings challenge the widespread idea that students use AI as a short-cut (to save time) and suggest that they are using them as pedagogical scaffolds.

Compared to the existing literature, this study's findings both support and contradict previous research results. The results are strongly consistent with other studies in that AI utilization is widely spread among EFL students, the high frequency of usage, and the primary purposes of usage being cognitive purposes [16, 18, 20, 21]. However, some of the findings notably were different from other researchers' findings. Compared to Barzanji & Alsofyani's findings [28], Libyan EFL student-teachers reported lower percentages for using AI to overcome writer's block. Finally, they key finding that was reported be student-teachers is their fact-checking habits of AI suggestions that suggests a trust-gap. It also highlights a gap in AI literacy as nearly half of the student-teachers reported not verifying AI outputs that might be what is known as AI hallucination. This means even though Libyan EFL student-teachers are proficient users of AI tools, many of them lack the required critical literacy that help them evaluate AI output.

Factors Driving Student-Teachers' Reliance on AI Tools

The primary drivers for AI tools usages for Libyan EFL student-teachers were their desire for better grades, time constraints, and belief that AI helps them reduce plagiarism risks along with having difficulties with style guides and writing conventions. The findings closely align with the existing research findings [18, 20, 30, 31, 32]. For instance, in this study, the Libyan EFL student-teachers reported that using AI tools raised their confidence in their writing which matched what Khalid's [32] participants reported.

Conclusion

The aim of this study was to investigate the Libyan EFL student-teachers' utilization of AI tools in academic writing to identify the types of AI tools they used, their purposes and frequency of using AI tools, and the factors drove them to use AI tools in academic writing. Findings revealed that even though they mostly relied on LLMs, they utilized diverse combinations of AI tools to create their distinct toolkit. The student-teachers embedded AI tools into their writing practices for different purposes, but mostly for editing and polishing their

drafts. The dominant factors that drove them for AI tool utilization were their desire for higher grades, time pressures, and their awareness of plagiarism risk among other factors. The findings challenge the idea that EFL students use AI as a shortcut or a ghostwriter because they illustrated how the student-teachers distinguish between using AI as supporting tools and replacing tools.

Pedagogically, the findings emphasize a need for writing instruction that dedicates more time for higher-order skills, such as creating arguments, using evidence, and raising the student-teachers rhetorical awareness. The results highlight the necessity for guided instruction that aims to raise student-teachers' understanding of students about academic integrity. They also emphasize the necessity for guided training on AI-tool utilization ethics throughout the academic writing process, especially in paraphrasing, citation, and referencing. Institutional support is needed to support the student-teachers' writing by integrating AI literacy into the curriculum to help them learn to use AI tools as a developmental scaffold. Accordingly, Libyan educational institutions, especially Faculties of Education, should develop AI-related policies to train students on the ethics of using AI tools.

This study has a number of limitations one of which is the single-institution context. As it was conducted in one of the three faculties of education of the public university, data cannot be generalized. The other limitation is related to the sample size. The small sample size also limits the generalizability of the results. Finally, self-reported data can be considered a limitation because of the participants' lack of self-knowledge, their tendency to agree with statements, and their social desirability biases.

As mentioned in the beginning, AI tools are not only changing how EFL students write, but also reshaping their purposes of writing and expectations from their writing process. Thus, to move beyond prohibiting or giving permission, further research is needed to understand how AI tools are utilized and how they impact and reshape their produced texts. For instance, further research is needed to analyze students' drafts after using AI tools. Instead of focusing on merely on one of the tools, such as *ChatGPT*, further research is needed to investigate how AI tools are used in all of the stages of academic writing process and the students' purposes for using them and how they use them. Think-aloud protocols or screen-recording analysis can be utilized to observe student-teachers' interactions with AI tools during their academic writing process. Understanding what motivates EFL students to use AI tools and how they use them will help in creating learning environments that foster critical, reflective, ethical writers.

Compliance with ethical standards

Disclosure of conflict of interest

The authors declare that they have no conflict of interest.

References

1. University of Leeds, "Academic Writing: What is academic writing?" 2024, Available from https://library.leeds.ac.uk/info/14011/writing [accessed January 2025].
2. S. Aldabbus, & E. Almansouri, "Academic writing difficulties encountered by university EFL Learners," British Journal of English Linguistics, vol. 10(3), pp. 1-11, 2022.
3. D. G. Tasker, "A case study of the variety of writing assignments in an undergraduate English department," English for Specific Purposes, Vol. 66, 33-62, 2022. https://doi.org/10.1026/j.esp.2021.12.001
4. P. A. Alexander, J. Fusenig, E. C. Schoute, A. Singh, Y. Sun, & J. E. van Meerten. "Confronting the challenges of undergraduates' argumentation writing in a "Learning How to Learn" course," Written Communication, Vol. 40(2), 482-517, 2023. https://doi.org/10.1177/07410883221148468
5. M. A. Tabari & M. D. Johnson, "Exploring new insights into the role of cohesive devices in written academic genres," Assessing Writing, Vol. 57, 100749, 2023. https://doi.org/10.1016/j.asw.2023.100749
6. T. Kamimura, " Citation behaviors observed in Japanese EFL students' argumentative writing," Journal of Pan. Pacific Association of Applied Linguistics, Vol. 18(1), 85-101, 2014.
7. O. Kapranov, "Citation and referencing practices in argumentative essay writing by upper-intermediate EFL students," Studia Anglica Resoviensia, Vol. 20, 71-87, 2023.
8. S. A. Mahammoda, " Factors affecting the quality of undergraduate research work in Bahir Dar University, Ethiopia," International Journal of Innovative Research and Development, Vol. 5 (12), 23-27, 2016.
9. W. M. Y. Ben Raba'a, "Challenges in Academic Writing: Libyan Undergraduate EFL Students' Summarizing and Paraphrasing of English Source Texts," North African Journal of Scientific Publishing (NAJSP), Vol. 3(3), 334–341, 2025. https://doi.org/10.65414/najsp.v3i3.593
10. D. K. Dweni, "Challenges encountered by Libyan EFL undergraduate students in English research writing," Scientific Journal of Faculty of Education, Misurata University -Libya, Vol. 9(21), 203-219, 2023.

11. R. Elmabruk & R. Bishti, “Returning to graduation project: Attitudes and perceived challenges of students and staff at a Libyan EFL Department,” Arab World English Journal (AWEJ), Vol. 11 (3), 127-148, 2020.
12. A. Elmojahed, “Writing research projects: Opportunities and challenges,” Journal of the Faculty of Education, Vol. 5, 40-62, 2010.
13. S. Elmagbub, “Exploring Libyan EFL Student-Teachers' Challenges in Writing Their Graduation Research Projects: A Case Study,” Libyan Journal of Educational Sciences, Vol. 12, 364-389, 2024.
14. S. H. M. Khalifa & S. M. Salem, “Identifying problems encountered by EFL Libyan learners in research writing,” Bani Waleed University Journal of Humanities and Applied Sciences, Vol. 9(2), 570-586, 2024. https://doi.org/10.58916/jhas.v9i2.283
15. M. F. Lolbi & H. Meiteeg, “Identifying students' academic writing difficulties and the factors behind them at the Faculty of Education of Tripoli University, Libya,” Libyan Journal of Educational Sciences, Vol. 13(2), 364-389, 2024.
16. A. Alyami, S. Aloyaibi, & W. Khan, “Saudi EFL learners’ perceptions of using artificial intelligence and its impact on their writing skills. Arab World English Journal, Vol. 16(1), 349-365, 2025. DOI: https://dx.doi.org/10.24093/awej/vol16no1.22
17. A. Moussa, S. Elkhetabi, & H. Eddahmani, “Tracing Artificial Intelligence in EFL student writing: A linguistic approach to identifying machine-assisted text in undergraduate writing,” Arab World English Journal, Special Issue on Artificial Intelligence, Vol. 3, 73-87, 2026. https://dx.doi.org/10.24093/awej/AI3.5
18. A. Alammar & E. A. Amin, “EFL students’ perceptions of using AI paraphrasing tools in English language research projects,” Arab World English Journal, Vol. 14(3), 166-181, 2023.
19. K. Alzubaidi, “Forward: Artificial Intelligence in EFL and Academic Writing: Pedagogical, Ethical, and Critical Perspectives from Global Higher Education,” Arab World English Journal, Special Issue on Artificial Intelligence, Vol. 3, 3-4, 2026. https://dx.doi.org/10.24093/awej/A3.1
20. A. Bouzar, K. EL Idrissi, & T. Ghourdou, “ChatGPT and academic writing self-efficacy: Unveiling correlations and technological dependency among postgraduate students,” Arab World English Journal (AWEJ) Special Issue on ChatGPT, 225–236, 2024. https://doi.org/10.24093/awej/ChatGPT.15
21. N. Bin Dahmash, “I No Longer Need a Tutor”: Saudi EFL Students’ Independent Use of ChatGPT for Essay Writing and Grammar Learning. Arab World English Journal, Special Issue on Artificial Intelligence, (3):147-165, 2026. https://dx.doi.org/10.24093/awej/AI3.10
22. A. Nguyen, Y. Hong, B. Dang, & X. Huang, “Human-AI collaboration patterns in AI-assisted academic writing,” Studies in Higher Education, Vol. 49(5), 847–864, 2024. https://doi.org/10.1080/03075079.2024.2323593
23. H. A. Salman, M. A., Ahmad, R., Ibrahim, & J. Mahmood, “Systematic analysis of generative AI tools integration in academic research and peer review,” Online Journal of Communication and Media Technologies, Vol. 15(1), e202502, 2025. https://doi.org/10.30935/ojcmt/15832
24. D. A. Kingsley, “Can generative AI facilitate the research process? It’s complicated,” College & Research Libraries News, Vol. 84(9), 314-317, 2023.
25. University of Texas at Austin Libraries. “UGS 302: Hope Amidst Change – Ramirez: Generative AI Tools,” LibGuides. 2025, October 2. https://guides.lib.utexas.edu/c.php?g=1494834&p=11163789
26. B. Ozfidan, D. A. S. El-Dakhs, & L. A. Alsalim, “The use of AI tools in English academic writing by Saudi undergraduates,” Contemporary Educational Technology, Vol. 16(4), 527, 2024. https://doi.org/10.30935/cedtech/15013
27. J. Algaraady, & M. Mahyoob, “ChatGPT’s capabilities in spotting and analyzing writing errors experienced by EFL learners,” Arab World English Journal (AWEJ) Special Issue on CALL, Vol. (9), 3–17, 2023. https://doi.org/10.24093/awej/call9.1
28. A. M. Barzanji, “Exploring Saudi EFL learners’ motivation and perceptions of ChatGPT and instructor: Feedback in paragraph writing,” Arab World English Journal (AWEJ) Special Issue on Artificial Intelligence, Vol. 3, 5-25, 2026. DOI: https://dx.doi.org/10.24093/awej/AI3.1
29. H. Shi, C. Chai, S. Zhou, & S. Aubrey, “Comparing the effects of ChatGPT and automated writing evaluation on students’ writing and ideal L2 writing self,” Computer Assisted Language Learning, 1-28, 2025. https://doi.org/10.1080/09588221.2025.2454541
30. Y. Fedoriv, “Challenges in AI-assisted academic writing: A case study,” Innovations in Language Teaching Journal, 1(1), 35–50, 2024. https://doi.org/10.53463/innovltej.20240284
31. K. Munawwaroh & M. Fahreza, “Integrating AI tools in English writing classes to enhance student accuracy and coherence,” The Journal of Academic Science, Vol. 2(5), 1507-1516, 2025. https://doi.org/10.59613/vnnrve23

32. M. W. Khalid, “Investigating EFL learners' perceptions of the use of AI language tools: A mixed-method study,” Arab World English Journal, Special Issue on Artificial Intelligence, Vol. (3), 195-211, 2026. https://dx.doi.org/10.24093/awej/AI3.13
33. S. Koos & S. Wachsmann, “Navigating the impact of ChatGPT / GPT4 on legal academic examinations: Challenges, opportunities and recommendations,” Media Iuris, Vol. 6(2), 255–270, 2023. https://doi.org/10.20473/mi.v6i2.45270
34. A. Alsayd, M. Masoud, A. Abdullah, N Alzletni, A. Maati, A. Barka, & N. Baroud, “Postgraduate Students' Usage Patterns, Perceptions, and Attitudes Toward Artificial Intelligence Applications in Learning: A Case Study of the University of Zawia, Libya,” Journal of Education and Teacher Training Innovation, Vol. 3(1), 01-24, 2025.
35. N. Baroud, K. Alouzi, Z. Elfzzani, N. Ayad, & H. Albshkar, “Educators’ Perspectives on Using (AI) As A Content Creation Tool in Libyan Higher Education: A Case Study of The University of Zawia,” Journal of Educational Research and Innovation Technology, Vol. 1(2), 61–70, 2024. https://doi.org/10.34125/jerit.v1i2.12
36. H. A. A. Emran & F. M. Elhony, “Challenges in Implementing Artificial Intelligence in Libyan Higher Education,” East Asian Journal of Multidisciplinary Research (EAJMR), 4,10, 5137 – 5146, 2025.
37. A. S. Imhmed Mohamed, A. M. A. Abdulrahman, M. A. Salah Aboghsesa, & A. H. M. Alzoubi, “Artificial Intelligence Technologies and Their Impact on Higher Education in Libya: A Field Study at the University of Benghazi,” African Journal of Advanced Pure and Applied Sciences, Vol. 4(3), 14–22, 2025. https://doi.org/10.65418/ajapas.v4i3.1296
38. A. M. Msimeer, “Exploring EFL Libyan Students’ Use of AI ChatGPT in English Language Learning,” Al-Jabal Journal of Humanities and Applied Sciences, Vol. 5(2), 236-248, 2024. https://ajhas.ly/index.php/ajhas/article/view/20
39. N. M. Elsaadi, “EFL Libyan students' Perception towards the use of Artificial Intelligence (AI) as a tool for learning English language: A study at department of English, Sirte University,” Bani Waleed University Journal of Humanities and Applied Sciences, Vol. 11(1), 191-205, 2026.
40. F. Davis, “Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology,” MIS Quarterly, Vol. 13, 319-340, 1989. https://doi.org/10.2307/249008
41. L. S. Vygotsky, “Mind in society: The development of higher psychological processes,” Harvard University Press, 1978.
42. J. W. Creswell & V. L. Plano Clark, “Designing and Conducting Mixed Methods Research (3rd ed.)” SAGE Publications, 2018.
43. J. W. Creswell & J. D. Creswell, “Research Design: Qualitative, Quantitative, and Mixed Methods Approaches,” SAGE Publications, 2022.
44. Julius AI, “Julius [Data analysis AI tool],” 2025. https://julius.ai
45. Formula Bot, “Formula Bot [Generative AI tool],” 2026. https://formulabot.com

