Soumission : **06/06/2025** **Acceptation : 02/07/2025** **Publication** : **15/08/2025**

Developing AI-Driven Soft Skills in Algerian EFL Master's Students: Challenges and Prospects for Research Competence

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Received: 06/06/2025; Accepted: 02/07/2025; Published: 15/08/2025

Abstract:
This paper explores Algerian EFL master students` soft skills in using technology and AI-driven tools in completing research projects and dissertations. In this context, an exploratory/quantitative method was adopted through a twelve-question online structured questionnaire administered to eighty-seven (87) students (Master 1 and Master 2) from the English Department at M`Hamed Bougara University of Boumerdes. The primary objective was examining how the learners use AI-driven technology in research and identifying their challenges when completing their tasks. Despite the numerous benefits of AI in research, the results showed the students` limited soft skills, on the one hand, and their poor academic research skills, on the other. These were attributed to a lack of sufficient training, coupled with inadequate methodology teaching, which focuses on traditional pedagogy rather than a digital one. Addressing these issues would require strategic technology and AI-driven tools` implementation by prioritizing extensive teacher/student training on soft skills and ethical guidelines to maximize AI's potential in research-oriented learning. Ultimately, equipping EFL students with AI-enhanced soft

skills will bridge the gap between traditional instruction and modern research requirements, preparing them for academic and professional success in an increasingly digital world.

***Keywords**: AI-driven soft skills, Algerian EFL Master students, research competence, academic writing, information literacy.*

Développement des compétences relationnelles basées sur l'IA chez les étudiants algériens en master d'anglais langue étrangère : défis et perspectives pour la recherche en matière de compétences

Résumé :
Cet article examine les compétences transversales des étudiants algériens en Master EFL dans l'usage des technologies et des outils fondés sur l'intelligence artificielle pour la réalisation de projets de recherche et de mémoires. Une enquête exploratoire à visée quantitative a été menée à l'aide d'un questionnaire structuré en ligne composé de douze questions, administré à 87 étudiants de Master 1 et 2 du Département d'anglais de l'Université M'Hamed Bougara de Boumerdès. L'objectif principal était d'analyser l'intégration des technologies basées sur l'IA dans la recherche académique et d'identifier les difficultés rencontrées. Les résultats ont mis en évidence des compétences transversales limitées ainsi qu'une faible maîtrise des pratiques de recherche, dues à un manque de formation spécifique et à un enseignement méthodologique traditionnel. Pour combler ces lacunes, une intégration stratégique des outils numériques et de l'IA est nécessaire, accompagnée d'une formation approfondie des enseignants et des étudiants portant sur les compétences transversales et les enjeux éthiques. Renforcer ces compétences permettrait de mieux répondre aux exigences de la recherche contemporaine et de préparer les étudiants EFL à réussir dans un environnement académique et professionnel de plus en plus numérique.

***Mots-clés** : Compétences transversales liées à l'IA, Étudiants algériens en Master d'anglais langue étrangère (EFL), compétence en recherche, écriture académique, culture informationnelle.*

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Introduction

In today's world, artificial intelligence (AI) is one of the most powerful technological tools that shapes the settings of academic research. Indeed, AI instruments play a key role in collecting data, gathering references, and finding solutions to a given problem in different fields. This explains its growing importance in all disciplines and fields, such as medicine, human sciences, literature, and linguistics, among others. However, while AI offers important benefits in the field of research and marks a noteworthy force in the research process, it also presents key constraints and limitations. Particularly, it brings problems related to ethics, data quality, reliability, and interpretation of the results.

As previously noted, artificial intelligence has been broadly explored by many researchers, with some research works emphasizing the important role of AI in education, while other studies have presented opposing views and highlighted their concerns and challenges. These controversies and variations among researchers disclose the complexity of AI in research and education. To the best of the researchers' knowledge, few empirical investigations have examined how AI, as a specific form of research support, operates within actual classroom environments in Algeria, especially from the perspectives of students. By all accounts, there is limited understanding of how AI tools are perceived, adopted, or challenged in research-based educational practices. This lack of localized insight presents a clear research vacuum that calls for contextualized inquiry.

In light of the identified research gap and the complex dynamics surrounding AI integration in Algerian academic

research, the following research questions are posed to guide the present investigation and deepen our understanding of learners' perceptions, practices, and challenges related to AI use in educational settings.

- RQ 1: Do Algerian EFL master's students use technological and AI-driven tools when conducting research projects and completing dissertations?
- RQ 2: What challenges do they face when doing research?

By answering the two questions, the study also aims to join Algerian researchers' efforts to provide a timely and relevant perspective by clarifying students' AI-driven practices when doing research and by reviewing the existing literature to draw on theoretical frameworks from different Algerian and international research works.

1. Literature Review

1.1. Studies on AI Importance in Research

Artificial intelligence offers a wide range of tools in research which trigger knowledge from different perspectives (Achili and Zerrouki, 2024). In this context, the implementation of AI in research reforms how knowledge is created, applied and interpreted. Along the same lines of ideas, this has generated practical and philosophical implications. AI integration serves as an extension to human capabilities as machine algorithms are used to recognize and analyze large datasets and employed in medical research to predict disease results (Topol, 2019).

According to Marshell and Wallace (2019), artificial intelligence also plays a great role in research and research methodology as it changes and filters thousands of research papers. In the same line, Mazzoti (2023) adds that AI reveals

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interdisciplinary value when it helps in analyzing ancient texts and deciphering their scripts. As a matter of fact, AI systems influence decisions related to research and education in general as its efficiency enables researchers to analyze data in a short period of time, limits human biased judgment, and promotes interdisciplinary cooperation and collaboration, as Bullock et al. (2020) claimed.

1.2. Learners' Experiences and Perceptions of AI Implementation in Research

AI implementation in research has triggered the attention of many scholars in recent years, fueling a heated debate and a wide range of inquiries among students and researchers. As AI tools become more shared in research contexts, numerous studies have been conducted to explore how learners view the role and impact of integrating AI in research. These investigations explore AI usefulness and its ability to improve the research process in an efficient way. They tackle all perspectives and perceptions of AI in research and technology in general. The research outcomes are of significant advantage as they provide insights into AI and how it shapes academic research.

In a study conducted by Zhang and Dafoe (2019) on the American public's attitudes towards artificial intelligence integration into education, the investigation concluded that most of them support the idea of integrating AI and welcomed technology by claiming that it is a useful tool that improves productivity, more specifically in analyzing data and literature reviews.

Similarly, research conducted by Almassaad, Alajlan, and Alebaikan (2024) explored how university learners in Saudi

Arabia perceive AI tools. They collected their data from a cross-sectional survey which yielded 859 responses. They also examined the challenges they face when using AI tools. The findings revealed that the majority of students implement AI, and more frequently, ChatGPT in their studies. They stated that AI tools are useful and helpful because they save time, collect data, and bring references. However, they demonstrated their use with some reservations. They argued that AI tools might hinder the process of doing research through ethical issues like plagiarism, reducing human creativity and autonomy, and providing unreliable information. In addition, they raised the matter of fees that could be an obstacle to having access to AI tools.

In the same vein, Chan and Hu (2023) introduced another study which investigated university learners' attitudes and perceptions of integrating AI technologies in higher education. They collected their data from a survey which was distributed to 399 students at the University of Hong Kong. The results of the study showed that learners have positive views towards AI implementation. They argued that AI tools assist students in academic research and support them to write essays and research papers. Similar to the previous outcomes, learners highlighted some challenges of AI, such as ethics, accuracy, and privacy, among others, and suggesting more institutional ethical guidance in education and research.

Alshanberi et al. (2024) also examined the perceptions and challenges of AI integration among students of Batterjee Medical College. The sampling of the study was composed of 131 participants who answered a questionnaire. The findings demonstrated that AI tools are of paramount

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importance, and learners perceive them positively as useful ways of research and education in general.

In a more recent investigation, Alshamy, Al-Harthi, and Abdullah (2025) studied the learners' perceptions and attitudes towards AI integration in research and education. They provided surveys to 555 learners and 168 academics from Oman, Sultan Qaboos University.The outcomes demonstrated that both groups express their willingness in implementing AI. Learners reported that AI tools are useful in research and writing assignments; academics found it helpful in teaching and assessment. They characterized AI with innovation and efficiency, but referred to challenges and concerns like plagiarism and over-reliance. The study recommendations were presented in promoting training in the effective way of applying AI with ethical guidelines to enhance research and education.

1.3. Research on ChatGPT: Perceptions and Attitudes

Baidoo-Anu and Ansah (2023) discussed the role of ChatGPT in promoting learning and teaching. They stated that this AI tool is beneficial and improves learning and teaching in providing formative feedback and assessment. However, they highlighted some challenges related to it, like generating wrong information. Consequently, they recommended that policy makers should find a solutions to use this tool in a way that could serve education and research effectively.

A similar investigation conducted by Dergaa, Chamari, Zmijewski, and Ben Saad (2023) also highlighted the cardinal role of ChatGPT in academic research. The study emphasizes the potential advantages and disadvantages of

using the tool academic writing and research. The findings of the study revealed that while ChatGPT improves productivity in research, it raises risks about the authenticity and credibility of the content and information. Hence, they called for other investigations that tackle ethical considerations of implementing AI in research; they suggest further recommendations which ensure transparency implications in the research process and maintain creativity to enhance the process of research in the era of AI.

In the same year, Sullivan, Kelly, and McLaughlin (2023) explored the opportunities, concerns and challenges of using ChatGPT into research. They claimed that despite the fact that Chat GPT tool offers many opportunities and benefits, it causes some challenges and obstacles when integrating it in research. The outcomes of this study demonstrated the lack of studies about learners' perspectives and the best way to use ChatGPT to improve the research process and learning in general.

Additionally, Van Horn (2024) examined learners' perceptions towards the use of ChatGPT. The researcher conducted an exploratory qualitative analysis to discover the impact of the tool in EFL classes among Korean learners. The researcher collected data through survey and interviews, conducted among 120 learners. The findings revealed that students hold positive attitudes toward the use of ChatGPT and explained that it plays a role in developing their skills. The results also stressed the role of AI in improving autonomous learning. Further, the researcher suggested some recommendations, such as refining the quality and types of AI tools.

Through the analysis of this review, it is notable that there is a lack of studies, specifically those which tackled learners'

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perceptions towards AI, particularly in the context of research. While a few studies address AI in general in Algeria. the views of learners are still under-represented. As a result, this study is instrumental in examining students' perceptions and perspectives on AI integration in research, addressing an important gap in existing literature.

2. Method

An exploratory/quantitative framework was adopted to examine Algerian master students' research skills in using technology and AI tools when completing research projects and dissertations. The research involved a purposive sample of eighty-seven (87) students, aged 25 to 55, from the Department of English, Faculty of Letters and Languages, M`Hamed Bougara University of Boumerdes. An online structured questionnaire, carefully designed and piloted, consisted of 12 items across two sections, covering topics such as research skills, AI use practices, benefits, and ethical considerations. The data collection phase spanned from April 24th, 2025, to May 1st, 2025, by assuring the participants a full voluntary participation condition to take part in the survey. Through the selected methodology and tool, the study aimed to provide insights into the current state of students` research competence and the ways they use and perceive technology and AI tools as beneficial assistance when doing research.

3. Results` Presentation and Analysis

As previously outlined, the questionnaire is divided into two principal sections, each covering a different thematic area. The analysis proceeds in a stepwise way that follows

each section's answers, accompanied by their corresponding figures and percentages. Due to page limitations, only the most salient questions are visually represented through graphs, while the remaining questions are reported descriptively in narrative form as follows:

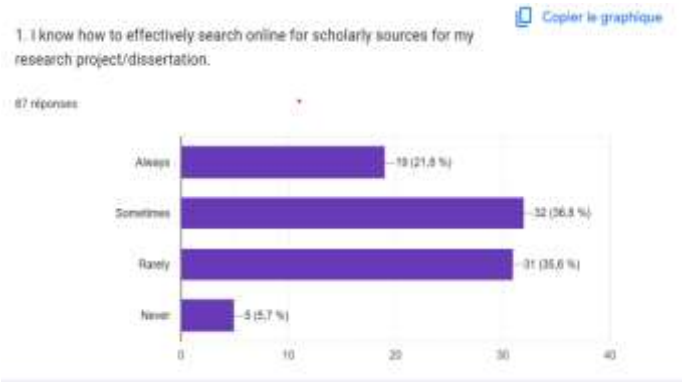

Figure 01. Online search for scholarly resources

Answers to the first question, dealing with the students` self-assessment of their online research capacities for research projects or dissertation completion, show the small related number of students (21.8%) who confirm their knowledge of effectively searching scholarly materials. Yet, *sometimes* (36.8%) and *rarely* (35.6%) answers suggest that more than 70% of students struggle to find reliable online sources. This is supported by 5.7% of the respondents who express their complete lack of knowledge, suggesting a critical gap that can negatively impact their academic performance. Despite students` early instruction on research methodology and bibliographic research, the findings highlight a noted need for more support and guidance on data research to enhance students` abilities and boost their skills in navigating scholarly information.

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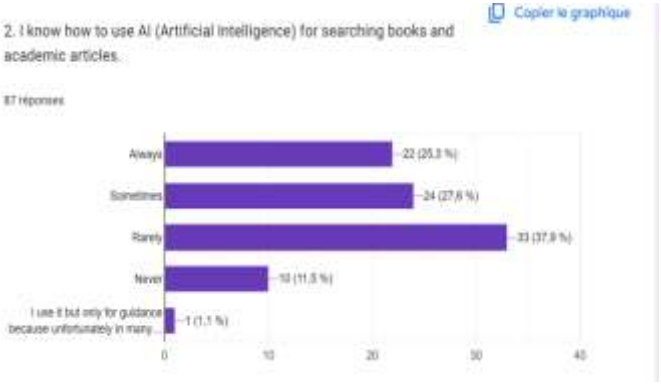

Figure 02. AI use to search academic resources

The above-reported inconsistency and difficulty in searching online resources do not concern the poor bibliographic research skills but also the students` incapacity to use AI to do the same tasks. In fact, the highest percentage of respondents (37.9%) admit their *rare* use of AI, as they don't know how to use it, in addition to 11.5% of the students who stated they *never* use it for academic purposes. Significant percentages of students who feel comfortable with AI use are also reported in the graph, with 25.3% of the students reporting that they *always* know how to use AI effectively and 27.6% indicating that they *sometimes* manage to do so. This indicates the mitigated use of AI, with some students who seem to adopt it in their research, while the majority still lack the appropriate knowledge, skill, and confidence to integrate it into their research habits.

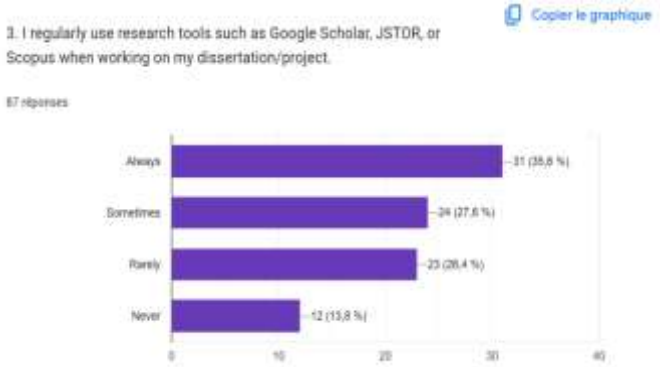

Figure 03. Research data-bases` use for research

In an attempt to assess the frequency of using research tools such as Google Scholar, JSTOR, or Scopus, the results show the general population (35.6%) frequently use them by answering *always*. The second category of respondents (27.6%) answer *sometimes*, closely followed by *rarely,* with 23 responses (26.4%). Less significant responses are reported from 12 respondents (13.8%) who claim *never* using the mentioned academic research tools for their dissertation/project work. Combined, the *rarely* and *never* answers reflect a considerable number of students who are quite reluctant to use research platforms, either due to research methodology shortfalls or potential barriers to accessing the platforms.

Regarding participants` training on citation and reference management tools such as Zotero, EndNote, or Mendeley, the majority of respondents (33.3%) report inadequate preparation, as they rarely received training on these tools. These respondents are closely followed by those who *never* (32.2%) received adequate training. Besides, only 19.5% (17 respondents) report *sometimes* receiving sufficient training, while just 12.6% (11 respondents) select *always*.

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Collectively, the percentages highlight a potential area for improvement in academic preparation and support services. These percentages also show the poor rate of respondents who truly master reference tools, calling therefore for extensive training to enhance students` citation skills.

As concerns students` ability to automatically format research bibliographies according to the academic standards (APA, MLA, etc.), the graph shows that a significant majority lacks consistent knowledge of this skill. Most respondents (40.2%) answer *rarely*, closely followed by 24.1% (21 respondents) reporting *never* having this knowledge. This indicates that nearly two-thirds of the students *rarely* or *never* use automatic formatting despite its availability on all students` personal computers` Microsoft Word's bibliography automation features. Only 18.4% (16 respondents) each selecting either *always* or s*ometimes* know how to use this functionality, signaling an important gap in utilizing automatic tools.

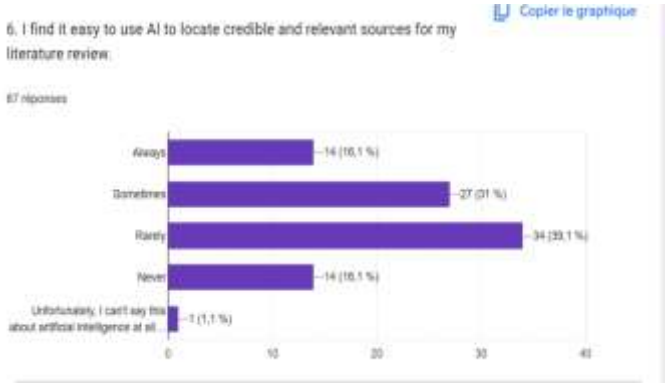

Figure 04. AI use and relevant sources location

Technology use in academic research has been extended to AI employment in research papers by asking the students how comfortable they are when using AI for locating credible and relevant sources for literature review. Challenges in doing so is expressed by the majority of participants (39.1% respondents) who *rarely* find it easy to use AI for this purpose. The second largest group (31%) is the one including students who *sometimes* use artificial intelligence, indicating occasional reference to new technologies when conducting research. Similar percentages are reported among the participants who report using AI *always* or *never* (16.1% each) for locating credible sources for their literature review. The overall results show mixed experiences with AI as a research tool, with a slight tendency toward difficulty rather than ease for academic resources identification.

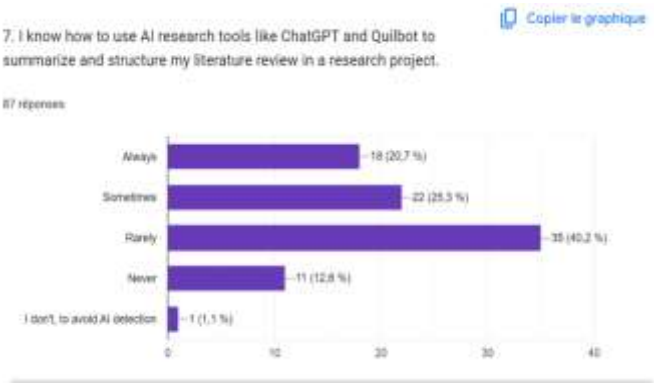

Figure 05. ChatGPT and QuillBot use in Literature Review

Using ChatGPT and QuillBot to summarize and structure literature reviews is also a question raised in the present survey. The question aims to assess the students` adoption of these popular tools when conducting research. Most

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respondents, 40.2% (35 respondents), indicate their rare use of the tools for literature review. The second largest category (25.3%) report their occasional use by answering sometimes, while 20.7% (18 respondents) of the respondents confirmed their AI usage by selecting *always*. Only a few participants (12.6%) indicate they never know how to use AI tools for literature review. Overall, the general findings suggest that despite the growing accessibility of AI tools, most students *rarely* or *never* know how to efficiently benefit from these technologies to complete their work.

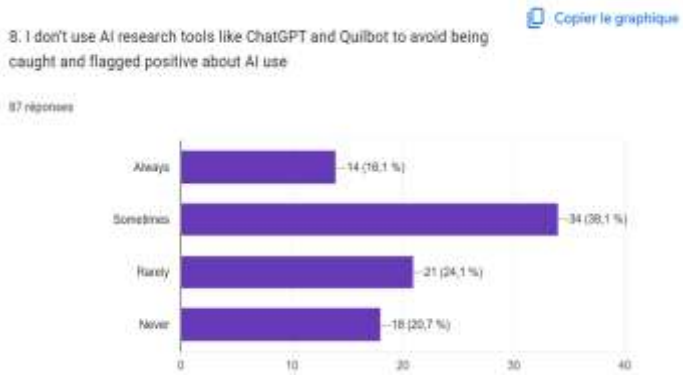

Figure 06. ChatGPT and QuillBot and AI detection

Concerns about being flagged for AI use is also raised here to account for the limited or extended use of ChatGPT and Quilbot. The results show that the large majority of the participants (39.1%) indicate their occasional employment of the two tools by answering *sometimes*. The second largest group (24.1%) *rarely* avoids AI tools for this reason. However, 16.1% (14 respondents) express their constant fear by answering *always* avoiding the tools to prevent being caught. Combined, the *always* and *sometimes* responses` rate show how the students fear of AI detection could impact

tool usage for a majority of the students. This reflects the importance of psychological barriers concerning the possible negative consequences of AI utilization in academic research. Yet, a minority (44.8%) *rarely* or *never* change their AI usage on detection concerns, indicating some students` capacities to cope with this matter.

As concerns students` challenges with organizing and synthesizing sources when writing literature review, the largest majority (43.7%) report their difficulty with this academic task by answering *sometimes*, closely followed by 27.6% (24 respondents) indicating *always* facing these challenges. Only a minority, 19.5% (17 respondents) of the sample answer *rarely*, followed by a small sample of respondents who *never* experience difficulties in this area. Together, 71.3% of participants either *always* or *sometimes* struggle with organizing and synthesizing sources for literature reviews, highlighting that this is a common challenge in academic research. The small minority of *rarely* and *never* options suggest that source organization and synthesis represent significant pain points for most participants in the survey.

On the question of challenges in finding appropriate sources for research topics, the graph shows that the latter is a common difficulty for most participants. The largest population (40.2%) report on their occasionally faced challenges, while 31% (27 respondents) indicate they always encounter such difficulty. Only a minority of respondents (19.5%) point to their *rare* struggle with source identification, and 12.6% (11 respondents) *never* face these challenges. The overall results show how the majority of students struggle with the research process due to the problem of source

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finding, which remains a persistent obstacle for most of them.

In an attempt to look into students` experience with academic writing itself and how they handle writing a whole project, most respondents (40.2%) state that they *sometimes* face difficulties with academic writing, while 24.1% report that they *always* struggle with it. A more confident population display lower scores when answering *rarely* and *never* (18.4% each). This indicate mixed experiences among the participants, with the ones having difficulties as the most prevalent in this survey. The findings suggest that academic writing is significant, despite its variation among students. This underscores the need for more support and instruction before moving to use technology-tools or AI ones, as academic writing is revealed challenging in itself as a skill.

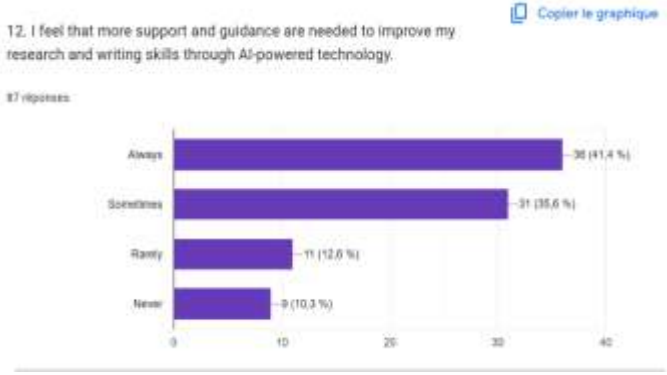

Figure 07. Need for AI Support in Research and Writing

To conclude the survey, the participants are asked to give their opinion on the necessity to improve research competence through support and guidance on the effective use of AI-powered technology in research. A significant percentage (41.4%) is reported among the respondents who

answered positively the questions. This proportion is closely supported by respondents (35.6%) who answered sometimes. This shows that over three-quarters of the respondents recognize the urgent need for assistance in implementing AI tools to improve their research competence. Only 12.6% of the respondents answered rarely, and 10.3% answered never. Clearly, the findings highlight a strong demand for academic and institutional assistance to help students bridge the existing gap between their current digital literacy level and the academic requirements of completing a dissertation or research project.

Overall, the results reveal Master's students` major problems in academic research and writing, namely, using digital and AI tools. Students` lack of confidence in essential research skills like searching for credible sources and literature organization is highlighted. Few students are familiar with research databases besides Jstor, Google Scholar, and Scopus, or reference management tools like Zotero, Mendeley, and Microsoft Word's automated referencing device. As for AI adoption, the significant majority express their incapacity to use it effectively, and some avoid it for fear of AI use detection and the subsequent sanctions. Challenges are not limited to technology-based tools, as most participants expressed their struggle with academic writing and source synthesis. Finally, the findings point to the strong need for more methodology training and support to construct both traditional and AI-based research skills.

4. Discussion

In an age of digital innovation, promises are expected to make academic research more prolific and accurate by

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implementing technology and AI tools. However, the noted gap between digital resources and master students' reported concerns and actual skills shows how limited the participants are regarding research competence and technology employment in completing research projects and dissertations. This finding supports Almassaad et al. (2024) and Alshamy et al. (2025), who underscored the students' positive attitudes toward AI and their lack of confidence and inadequate training to effectively use AI. This also aligns with Van Horn (2024), who emphasized learners' desire for flexibility and support when integrating AI in educational settings, and Sullivan et al. (2023), who noted the need for more studies and strategies that ensure appropriate implementation of tools like ChatGPT in academic contexts.

One of the most prevailing concerns is the students' low confidence when engaged in online searches for scholarly materials. To find credible sources to build the review of literature part, most participants expressed their lack of knowledge and poor skills in doing so. It is evident that without a strong basis in research fundamentals, students can risk surveying irrelevant materials, which may negatively impact the credibility and quality of their work. Such observations are mirrored in the work of Zhang and Dafoe (2019), who reported students' recognition of the usefulness of AI in filtering and analyzing data and their unawareness of how to assess the quality or reliability of the information retrieved.

In a similar vein to recent studies, the study sheds light on the restricted use of AI by the majority due to a lack of competence and fear of being flagged for academic dishonesty. Despite AI-driven benefits in research, ChatGPT

and QuillBot are avoided, suggesting an urgent need for clearer institutional ethical guidelines that support responsible AI use and draw its limitations. This result finds strong evidence in Dergaa et al. (2023) and Baidoo-Anu and Ansah (2023), who raised concerns over the uncontrolled employment of ChatGPT and the absence of clear usage policies, leading to ethical misuse and misinformation.

Another significant finding deals with students' employment of traditional academic databases and citation management tools. Technological tools such as Zotero, EndNote, and Mendeley are underused due to inadequate training on these tools, and even the most basic one, like Microsoft Word formatting features, available for everyone using Microsoft. A clearly established void between students' use or non-use of the tools underscores an essential requirement for technology-based referencing devices. These findings emphasize the conclusions set by Achili and Zerrouki (2024) and Bullock et al. (2020), who asserted that objectivity in data analysis is only realized when coupled with digital literacy and proper training on the different AI and technological instruments.

Difficulties in organizing and synthesizing information when crafting a literature review are also highlighted. The results underscore that even when students manage to collect appropriate sources and use AI-driven resources, they often struggle with critical analysis and organization of the information into coherent academic evidence. This finding aligns with Chan and Hu (2023), who reported that although learners view AI positively for its support in essay and paper writing, they also note persistent challenges in organizing content and maintaining academic rigor.

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The last revealed insight brings to light the need for institutional support, as most respondents signal their strong desire for more guidance in using AI technologies to boost their research competence and academic writing skills. A need for structured pedagogical training is felt throughout the data analysis to address not only the technical aspects of academic research but also the ethical use of AI. Alshamy et al. (2025) and Alshanberi et al. (2024) confirmed this need, emphasizing the importance of developing comprehensive training programs and ethical guidelines to promote responsible and effective AI integration in research and education.

Conclusion

This paper looked into Algerian EFL master students` research literacy in the digital age by exploring their actual skills, practices, and perceived benefits of technology and AI tools in research. The findings highlighted a critical disconnection between the accessibility of digital and AI-driven research tools and the students` capacity to use them effectively in academic settings. Despite their openness toward technology integration into their research projects, most students encounter substantial challenges, including inadequate training, low confidence, and reserve towards AI use for ethical reasons. Collectively, these challenges can hinder students' abilities and motivation, leading to poor academic quality and shadowed integrity.

In this vein, the results draw crucial implications for higher education institutions, highlighting an urgent

necessity for training on research methodology in general, and AI in particular. More courses and workshops should be initiated to introduce highly effective AI-assisted research engines such as Research Rabbit, Connected Papers, Litmaps, Consensus AI tools which can make a great difference in the way we approach research in general, and literature review writing in particular. Likewise, priority should be given to training on online search strategies, citation formulation and management, and source evaluation in an attempt to enhance students` academic writing competence and digital literacy. Also, challenges stemming from ethical concerns over AI use should be addressed efficiently through institutional guidelines and charts, which set clear rules on students` responsible and honest application of AI technologies.

In accordance with the previous recommendations, methodology traditional courses should be revised, considering the importance of targeted guidance in literature review writing, information synthesizing, and critical data analysis. It is only then that students` can combine the efficient information gathering skill and their capacity to assess the information accuracy and sources` credibility to produce high-quality academic work. Ultimately, universities should promote open dialogues on AI use and its ethical and responsible implementation in research, by fostering a culture of technological confidence and demystifying AI use.

Integrating these recommendations may close the gap between theory and practice, enhancing students` research skills by turning them from digital tool consumers to competent researchers prepared to prosperously grow in a technology-driven academic context.

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