



Artificial Intelligence as a Muse or a Rival? A Comparative Study of Poetic Creativity between Algerian EFL University Students and ChatGPT-4

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Abstract: Objectives: This study explores the role of Artificial Intelligence (AI) in enhancing poetic creativity across culturally diverse educational contexts, with particular attention to Algerian master's students in English studies. It examines the impact of ChatGPT-4-assisted composition on the quality of poetic output compared to traditional writing methods. **Methods:** This study employed a quantitative research design involving nineteen participants, all master's students from Batna 2 University in Algeria. The participants composed and revised sonnets with the assistance of ChatGPT-4, while the researcher evaluated their work across four dimensions: stylistic competence, thematic novelty, emotional vibrancy, and technical performance. The analysis combined statistical measures of creativity with a qualitative interpretation of the students' reflective responses. **Findings:** The quantitative analysis revealed statistically significant differences in creativity ($a < .01$, $d = 1.24$) and emotional expression ($a < .05$) in AI-assisted poems. The results indicated notable improvements in domain-specific skills (a 34% increase in structural competence), creative processes (a 28% rise in originality), and task motivation (self-reported engagement of 4.2/5). However, 63% of participants expressed concerns regarding the authenticity of AI-supported creative tasks. The study concludes that while ChatGPT-4 is an effective tool for enhancing poetic composition, it cannot serve as a replacement for human creativity. It supports Amabile's Componential Theory of Creativity and underscores the potential of AI to foster creative development while highlighting the need to uphold ethical standards and preserve creative integrity in educational settings. **Recommendation:** Future research should examine the integration of AI across diverse poetic genres and cultural contexts and develop more comprehensive ethical guidelines to balance technological innovation with the preservation of authenticity in creative education.

Keywords: AI-Assisted Writing; Educational Innovation; EFL Students; ChatGPT-4; Human-AI Collaboration; Poetic Creativity.

الذكاء الاصطناعي كمُلهم أم كمنافس؟ دراسة مقارنة في الإبداع الشعري بين طلبة اللغة الإنجليزية في الجامعات الجزائرية وبرنامج تشات جي بي تي

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الملخص: الهدف: يهدف هذا البحث إلى استكشاف دور الذكاء الاصطناعي في تعزيز الإبداع الشعري لدى طلبة الماجستير الجزائريين في اللغة الإنجليزية كلفة أجنبية، مع التركيز على مدى تأثير استخدام ChatGPT-4 في تحسين جودة النصوص الشعرية مقارنة بالطرق التقليدية. **المنهج:** اعتمدت الدراسة على منهج كمي، حيث طُلب من تسعة عشر طالباً من جامعة باتنة 2 في الجزائر تأليف وتنقيح سونيتات شعرية بمساعدة ChatGPT-4، وتم تقييم النصوص وفق أربعة معايير رئيسية: الكفاءة الأسلوبية، الأصالة الموضوعية، العمق العاطفي، والدقة التقنية. كما تم تحليل الانعكاسات النوعية للمشاركين حول تجربتهم. **أهم النتائج:** أظهرت النتائج تحسناً معنوياً في درجات الإبداع ($a < .01$, $d = 1.24$) والتعبير العاطفي ($a < .05$) في القصائد المنتجة بمساعدة الذكاء الاصطناعي، كما ارتفع مستوى الكفاءة البنيوية بنسبة 34% والأصالة بنسبة 28%، في حين بلغ متوسط الانخراط الذاتي 4.2 من 5. ومع ذلك، عيّر 63% من المشاركين عن قلقهم من فقدان الأصالة الإنسانية في النصوص الناتجة. **الاستنتاجات:** تؤكد النتائج صلاحية نظرية "Amabile" المكونية للإبداع، إذ يُسهم ChatGPT-4 في تنمية المهارات النوعية والعمليات الإبداعية والدافعية الذاتية، ومع ذلك يبقى الحفاظ على هوية المؤلف الإبداعية تحدياً رئيسياً. **التوصيات:** توصي الدراسة باستخدام ChatGPT-4 كأداة مساعدة تعاونية في التعليم الإبداعي بدلاً من اعتباره بديلاً للكتاب البشري، مع تطوير سياسات تربوية وأخلاقية تضمن التوازن بين الاستفادة التقنية والحفاظ على الجوهر الإنساني للإبداع.

الكلمات المفتاحية: الكتابة بمساعدة الذكاء الاصطناعي، الابتكار التربوي، طلاب اللغة الإنجليزية كلفة أجنبية، ChatGPT-4، التعاون بين الإنسان والذكاء الاصطناعي، الإبداع الشعري.

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Introduction

Artificial intelligence (AI) is transforming research, teaching, and administrative practices in higher education (Hamamra *et al.*, 2025; Choi, 2025; Mohamed *et al.*, 2024; Zhao *et al.*, 2024). It has the potential to manage instructional tasks, support teachers in personalizing learning experiences, and assist students in developing essential skills (Díaz & Nussbaum, 2024; Youssef *et al.*, 2024; Khlaif *et al.*, 2025). AI can also enhance learning flexibility by providing individualized feedback and tailored learning materials (Heung & Chiu, 2025; Wang *et al.*, 2024). Moreover, it facilitates improved academic performance and early identification of learning challenges (Pahi *et al.*, 2024).

The potential applications of artificial intelligence in schools are considerable (Hamdan *et al.*, 2025; Mohamed *et al.*, 2024; Wahas & Syed, 2024). AI technologies can support students in developing creative writing abilities and self-expression (Audichya & Saini, 2023; Elkins & Chun, 2020). Tools such as ChatGPT enable learners to generate original ideas and enhance the quality of their written work (Nouari *et al.*, 2024; Tsao & Nogues, 2024). Advancements in these systems may further stimulate creativity by fostering greater originality, flexibility, fluency, and elaboration, particularly as interactive features encourage language practice (Khoso *et al.*, 2025). Communicative engagement with ChatGPT can also facilitate divergent thinking and help overcome writer's block (Abdallah *et al.*, 2025).

The processes of reading, writing, and teaching poetry are increasingly influenced by AI. AI exposes students to new opportunities for refining their artistic abilities and enables engagement with diverse literary perspectives (Nouari *et al.*, 2024). By facilitating idea generation, improving linguistic accessibility,

and streamlining writing tasks, AI supports the advancement of creative skills. As a result, AI has demonstrated a positive impact on creative endeavors, including poetry composition (Kirmani, 2023; Salhab, 2025; Serbanescu & Nack, 2023; Shalevska, 2024).

Creative writing fosters language proficiency, conceptual understanding, and cognitive as well as emotional development (Durak *et al.*, 2026; Gu *et al.*, 2025). The integration of AI tools such as ChatGPT in poetry composition can increase learners' motivation and openness to exploring innovative writing techniques (Bena & Kalita, 2020). Engaging with poetry nurtures critical thinking, emotional awareness, and self-reflection, encouraging meaningful dialogue and personal identification (Kangasharju *et al.*, 2022). Poetry also contributes to language acquisition, extending vocabulary and enabling experimentation with sound and imagery (Kangasharju *et al.*, 2022; Rosenhan & Galloway, 2019; Syed & Wahas, 2020). Its aesthetic and rhythmic features highlight the expressive, often metaphorical nature of language (Kefala & Constantine, 2022; Tess, 2024). Writing sonnets, which demand precision in conveying complex ideas within a tightly structured fourteen-line format, presents unique challenges (McLoughlin, 2013). AI-driven tools like ChatGPT can offer valuable support to EFL/ESL students encountering difficulty with poetic creativity and the processes of composing and revising poems.

Technology is gradually being integrated into Algeria's education system as a means of enhancing educational standards (Al-Qadri *et al.*, 2024; Zarzour, 2022). While traditional methods have often emphasized teacher-centered instruction and rote memorization (Al-Qadri *et al.*, 2024; Ghizlene *et al.*, 2016), contemporary approaches are increasingly characterized by creativity and critical thinking (Boudouaia *et al.*, 2022). However, research

specifically addressing the application of AI in education, particularly in fostering students' creative agency, remains limited. Emerging evidence indicates that AI tools such as ChatGPT can stimulate creativity by supporting brainstorming and empowering learners in their creative pursuits (Pandey *et al.*, 2025).

This paper addresses the gap in understanding the impact of AI on poetic creativity among higher education students, focusing on Algerian master's students in literary studies. It evaluates the development of poetic skills, such as structural accuracy and metaphorical complexity, by comparing ChatGPT-4-assisted composition with traditional writing methods. Artistic outputs are assessed across dimensions including stylistic execution, thematic depth, emotional appeal, and technical proficiency. Through a controlled comparison, the study highlights the ways in which ChatGPT-4 can enhance creativity while also exploring the potential risks associated with overreliance on AI. The findings offer evidence-based recommendations for integrating AI into humanities education, supporting creativity theory and promoting critical literacy practices within non-Western academic contexts.

The inquiry underpinning this study is structured around the following research questions:

R.Q.1: How does ChatGPT-4 assisted intervention influence domain-specific poetic competencies (e.g., structure, creativity, motivation) among Algerian Master students, as measured by pre- and post-test comparisons?

R.Q.2: To what extent does ChatGPT-4 integration reduce variability in poetic creativity outcomes across students with diverse baseline writing proficiencies?

R.Q.3: Does the demographic composition (e.g., gender imbalance, writing proficiency distribution) moderate the efficacy of

ChatGPT-4 in enhancing lyrical creativity, as observed in non-parametric analyses?

This study will integrate AI-generated poetry into the classroom to enhance the creative thinking, writing, and self-expression of Algerian EFL master's students. The procedure involves students first composing an original 14-line sonnet independently, followed by the creation of a second sonnet with support from template-based prompts and iterative feedback on content, allowing for correction, thematic expansion, and greater metaphorical and stylistic sophistication with the assistance of ChatGPT-4 (Kirmani, 2023; Nouari *et al.*, 2024; Salhab, 2025). Poetic topics are selected either by the instructor (e.g., identity, nature) or by students themselves to encourage authentic engagement.

The instructor conducts guided sessions that incorporate direct instruction, brainstorming, as well as peer and AI-supported feedback. Student work is evaluated using the validated Poetic Competency Rubric, which assesses technical proficiency, creative processes, including originality and metaphorical complexity, and motivation (Abdallah *et al.*, 2025; Khoso *et al.*, 2025). A mixed-methods approach combining thematic analysis and quantitative pre- and post-intervention scores is employed to provide a comprehensive understanding of students' creative development. This combined human-AI approach aims to advance poetic artistry and literary analysis by integrating AI-generated content into humanities education (Pandey *et al.*, 2025).

Theoretical Framework

This study applies Amabile's Theory of Creativity (1983) to examine how creativity is perceived and enhanced in the poetic works of Algerian students utilizing ChatGPT-4. According to the theory, creativity results from the interplay of domain-relevant skills,

creativity-relevant processes, and task motivation (Amabile & Pratt, 2016; Burleson, 2005; de Alencar, 2012; Zhou *et al.*, 2023).

Poetic creativity relies on specialized domain knowledge, including advanced linguistic proficiency and mastery of elements such as rhyme, meter, and metaphorical expression (Baer, 2020; Gervas, 2001; Rodriguez *et al.*, 2018). These skills are cultivated through dedicated instruction and practice (Peskin & Wells-Jopling, 2012).

To foster the development of linguistic and stylistic skills, this study incorporates ChatGPT-4 as a brainstorming tool and source of inspiration (Beheshti *et al.*, 2023), motivating students to explore thematic content and research poetic concepts. Evidence suggests that sustained creative performance is closely linked to intrinsic motivation (Virvou *et al.*, 2023). Accordingly, this paper assesses the motivational impact of ChatGPT-4 by evaluating the emotional depth expressed in students' poems and affirms, based on recent findings, that AI tools can enhance the engagement of EFL students (Alfaleh *et al.*, 2025).

Related studies

Synthesis of Literature on AI in Creative and Educational Contexts

Studies of generative AI in the learning field, such as ChatGPT, reveal considerable potential alongside important challenges to address, resulting in a tension between its ability to enhance cognition and its possible inhibitory effects on original creativity (Kirmani, 2023; Shalevska, 2024).

Research indicates that AI can be used to complete certain creative tasks, with De Vicente-Yagüe-Jara *et al.* (2023) reporting that it increased the creativity indicators of university students in writing significantly, but it is not a substitute for human creativity. Similarly, Kirmani (2023) and Audichya, and

Saini (2023) found that ChatGPT is capable of producing coherent and complex poems. Nevertheless, its creativity is constrained by the scope of its training data, resulting in limitations compared to the originality and personal expression found in human poetry (Shalevska, 2024).

The effects of this intervention in educational settings are contingent upon its implementation. While it has the potential to improve self-efficacy and foster greater engagement (Mogavi *et al.*, 2024; Niedbała *et al.*, 2023), it also contributes to the development of AI literacy and the promotion of effective human-AI collaboration (Tsao & Nogues, 2024). Conversely, Niloy *et al.* (2024) identified a negative correlation between the use of ChatGPT and the creativity and originality of students in creative writing.

Significant concerns remain regarding bias, overreliance, and academic dishonesty in the use of AI (Kirmani, 2023; Shalevska, 2024). Additionally, Habib *et al.* (2024) observed that while AI can increase the fluency of divergent thinking, it may also encourage superficial learning.

The existing literature is limited by a lack of qualitative data, small sample sizes, and the absence of longitudinal studies, which has driven the pursuit of more quantitative and empirical research across diverse educational settings as well as the formulation of ethical standards (Boudouaia *et al.*, 2024; Jawabreh & Itmazi, 2025; Klimova *et al.*, 2024). Notably, a substantial gap remains in empirically investigating how large language models (LLMs) foster domain-specific creative abilities—such as poetry—in non-Western contexts, and how AI influences the emotional dimensions of creative writing, including intrinsic motivation (Li *et al.*, 2025). This study addresses these gaps by examining the effects

of ChatGPT-4 on the poetic production of Algerian master's students.

Poetry Writing in the Age of Artificial Intelligence

The emergence of digital tools such as ChatGPT is reshaping poetry writing and instruction; however, the existing literature does not adequately address critical questions regarding topic-specific poetic skills, the variability of creative processes, or the influence of demographic factors such as gender and expertise level.

For instance, Wang *et al.* (2025) found that AI tools enhanced the use of imagery and motivation for poetry among secondary students, yet no research has examined ChatGPT's effect on poetic ability at the university level or across demographic groups. Similarly, Niloy *et al.* (2024) reported a negative impact of ChatGPT on writing originality, but did not investigate the role of educational interventions or domain-specific poetic skills. Stanko-Kaczmarek *et al.* (2024) explored societal perceptions of AI-generated poetry, though their work does not address student-level poetic competencies or demographic influences.

Additionally, Koebis and Mossink (2021) adopted a distinct conceptual framework and did not assess the effects of interventions or demographic factors in the identification of AI-generated poetry. While Kirmani (2023) evaluated ChatGPT's technical ability to generate poetry, their study did not measure educational outcomes within a specific student group. Kangasharju *et al.* (2022) found that an experimental AI tool fostered poetic experimentation among secondary school students, but their research did not extend to university-level learners and reflected limited diversity in poetic skill. Nguyen *et al.* (2021) proposed a technical framework for generating Vietnamese poetry that focused on semantic

coherence but overlooked intervention-based learning outcomes. Finally, Petrassi (2025) compared AI and human creativity but did not examine the effects of ChatGPT-driven interventions in the context or population central to the present study.

Overall, the literature provides valuable insights but lacks detailed examination of ChatGPT's impact on poetic skills, creative diversity, and demographic variables among Algerian Master's students. This study aims to address these gaps by focusing on these specific areas within this unique academic context.

Methodology

Study Design

This quasi-experimental trial measured changes in poetic skills among Master's-level students following a ChatGPT-4 intervention. To allow for within-subject and pre-post comparisons, the entire 2024 Master's cohort completed a pre-test sonnet on a standardized topic. Several control measures were implemented to ensure internal validity.

- a. within-subject comparison;
- b. standard prompts and timing;
- c. blind rater training with rater training;
- d. tracking of the ChatGPT-4 protocol on premises via logged prompts; and
- e. small sample: Non-parametric statistics.

The study followed a three-step, quantitative methodology. During the pre-test phase, participants composed original sonnets without AI assistance, which were independently evaluated by two raters using the Poetic Competency Rubric (inter-rater reliability Cohen's kappa = 0.85), providing a baseline proficiency level ($M = 1.95$, $SD = 0.85$). Over a four-week period, students engaged with an interface built on ChatGPT-4, iteratively modifying their drafts. Quantitative usage analytics were collected, with reliability confirmed (Cronbach's alpha = 0.6). In the

post-test stage, students submitted revised sonnets, anonymously assessed using the same rubric. Pre- and post-test scores were compared using Wilcoxon signed-rank tests, and quantitative results were triangulated with qualitative reflections to ensure comprehensive analysis.

Participants

In this study, 19 Algerian Master's students (14 females, 73.7%; 5 males, 26.3%) from Batna 2 University participated. They were selected through purposive sampling based on prior experience in poetic writing and AI-assisted learning. The participants, all English enthusiasts at the C1 proficiency level, were aged between 22 and 25 years ($M = 24.6$, $SD = 1.9$) and held undergraduate degrees in English literature. Baseline writing proficiency averaged 1.95 ($SD = 0.85$) on a 3-point scale, with 6 novice, 9 intermediate, and 4 advanced writers. The observed gender imbalance reflects broader enrollment trends in Algerian humanities programs. Non-parametric tests, including the Shapiro-Wilk test ($\alpha < .001$) for non-normality in proficiency and analysis of skewness in gender distribution ($skew = -1.17$), were conducted to evaluate data distribution.

Instruments

Three validated instruments were employed in this study. The primary instrument was the Poetic Competency Rubric, which included 10-point Likert scales assessing technical skills, creative processes, and intrinsic motivation. The intervention involved a personalized ChatGPT-4 interface integrated with literary modules, real-time feedback, and usage analytics. Evaluation was conducted by two independent raters and showed strong inter-rater reliability (Cohen's kappa = 0.89). Qualitative data were gathered through supplementary surveys. All instruments were piloted with a sample of five participants ($n =$

5), and internal consistency reliability was confirmed (Cronbach's alpha = 0.82).

Instrument Validity and Reliability

All instruments underwent rigorous validation. The Poetic Competency Rubric was developed through an extensive literature review, expert consultation (CVI = 0.91), and pilot testing, demonstrating high inter-rater reliability (ICC = 0.87) and internal consistency (Cronbach's alpha = 0.84–0.89). The ChatGPT-4 interface was algorithmically validated, showing 92% accuracy in device identification, and its usage logs confirmed full adherence to research protocols. Validated Technology Acceptance Model items ($r = 0.79–0.86$) were used in post-session surveys and further refined through cognitive interviews. All instruments-maintained reliability coefficients above 0.80, verified on a biweekly basis.

Table (2): Validity and Reliability Metrics for Study Instruments.

Instrument	Validity Approach	Reliability Metric	Result
Poetic Rubric	Expert review (CVI)	Inter-rater ICC	0.87
	Pilot testing	Cronbach's α	0.84–0.89
ChatGPT-4 Interface	Algorithmic audit	Feedback accuracy	92%
	Usage analytics	Protocol adherence	100%
Post-session Survey	TEM adaptation (α from literature)	Internal consistency	0.79–0.86

Data Collection

Data were collected through pre- and post-intervention assessments measuring three domains: domain-relevant poetic skills, creativity-related processes, and intrinsic task motivation. Participants completed structured writing tasks, such as composing original poems and analyzing metaphoric expressions, both before and after a four-week ChatGPT-4-assisted intervention. During the intervention, they used the AI tool for brainstorming, editing,

and receiving structural feedback. Each task was evaluated using rubrics that assessed technical precision, originality, and emotional depth. To reduce bias, two independent raters, blinded to the study phase, assessed all submissions, and inter-rater reliability exceeded 0.85 (Cohen's κ).

Data Analysis

Given the small sample size ($N = 19$) and the non-normal distribution of the data (Shapiro–Wilk, $\alpha < .001$), Wilcoxon signed-rank tests were applied to compare pre- and post-test scores. Effect sizes were computed using Hodges–Lehmann estimates and rank-biserial correlations. Descriptive statistics, including mean, standard deviation, and coefficient of variation, were used to quantify central tendency and variability. Notably, post-test variability decreased significantly (e.g., Domain 2 SD declined from 1.158 to 0.597), suggesting a standardizing effect of the ChatGPT-4 intervention. All analyses were conducted with a significance level of $\alpha = .05$ (two-tailed) using Jamovi version 2.3.

Ethical Approval and Informed Consent

The study received ethical approval from the Research Ethics Board of the University of Batna 2, Algeria. All participants provided

written informed consent after being fully briefed on the study's objectives, the function of ChatGPT-4, and their right to withdraw at any stage. To maintain confidentiality, all data were anonymized, and raw submissions were stored on password-protected servers. The consent form explicitly stated that interactions with ChatGPT-4 were monitored solely for research purposes and that no personal information would be shared externally.

Results

This study examines the impact of ChatGPT-4 assistance on the poetic competencies of Algerian master's students, integrating quantitative and qualitative findings to address three research questions. The Results section presents Wilcoxon test statistics (Table 3) and descriptive analyses (Table 4), indicating significant improvements in technical, creative, and motivational domains (RQ1), decreased variability across proficiency levels (RQ2), and demographic-specific differences in efficacy (RQ3).

R.Q.1: How does ChatGPT-4 assisted intervention influence domain-specific poetic competencies (e.g., structure, creativity, motivation) among Algerian Master students, as measured by pre- and post-test comparisons?

Table (3): Wilcoxon Test.

Measure 1		Measure 2	W	Z	Df	p	Hodges-Lehmann Estimate	Rank-Biserial Correlation	SE Rank-Biserial Correlation
Domain1pre	-	Domain1Post	9.000	-3.051		0.002	-1.162	-0.868	0.277
Domain2pre	-	Domain2Post	8.000	-3.375		< .001	-1.750	-0.906	0.262
Domain3pre	-	Domain3Post	29.500	-2.636		0.009	-1.000	-0.689	0.256
SumPre	-	SumPost	3.000	-3.702		< .001	-3.500	-0.968	0.256

Note. Wilcoxon signed-rank test.

The Wilcoxon signed-rank test indicated a substantial effect of ChatGPT-4 on students' poetic performance, revealing significant gains in both creative and analytical competencies. Descriptive statistics (Table 4) further illustrate these improvements through changes in means, distributions, and coefficients of variation

across all domains before and after the intervention. The observed score increases suggest heightened cognitive engagement and creative interaction, supporting the assumption of a synergistic relationship between human creativity and technological augmentation.

To illustrate more concretely the influence of AI-assisted revision on students' poetic competencies, one participant's sonnet, titled "Love," is presented below in both its original and revised versions. The original version reads:

Original Version: Love

*My own heart is not enough to feel you
I need hundreds of hearts to say: I love you
Humans are really in need of love
But me! I am in need of
Two wings to fly as dove*

Following revision with ChatGPT-4, the same sonnet excerpt exhibits greater cohesion, enriched imagery, and a more refined rhythmic structure:

Revised Version: Love

*My single heart can scarcely hold your fire,
It longs for countless hearts to lift desire.
All humankind is starving to be loved,
Yet I, in yearning, seek two wings thereof*

This comparison demonstrates how the revised version enhances metaphorical depth while refining both metrical flow and rhyme scheme (e.g., "scarcely hold your fire" versus "not enough to feel you"). Furthermore, the shift from a literal declaration of love to more symbolic and elevated imagery illustrates the student's progression from surface expression to a more artistically sophisticated and evocative poetic style enabled by AI-assisted revision. The complete original and revised sonnets are provided in Appendix B for transparency.

The sonnet "Titanic" offers an additional example supporting these observed trends. While the original draft exhibits inconsistencies in rhythm, fragmented diction, and abrupt

transitions between personal grief and broader reflection, it nonetheless conveys a powerful sense of raw emotional intensity:

Original Excerpt: Titanic

*With a heart parted and a soul sank
I scarcely could pen my sorrow
Unforgettable memories bitterly slaughter
Every inch of me and too slow...*

Following revision with ChatGPT-4, the sonnet demonstrates improved rhythmic balance, enriched imagery, and a more cohesive thematic progression. The AI-assisted version reorganized the stanzas to retain the student's emotional intensity while refining lineation, rhyme, and overall structural harmony:

Excerpt (Revised, Titanic)

*My broken heart lies drowning in the sea,
A weight of sorrow pressing heavily.
The memories cut deep, yet time may heal,
And still through pain, my steadfast love is real.*

This transformation suggests that AI-assisted revision not only enhances expressiveness but also channels personal emotion into a more structured and formal poetic mode. Compared with Love Sonnet, Titanic further illustrates how ChatGPT-4 support enabled students to transform fragmented phrasing into coherent, symbolically intricate, and technically refined compositions. For transparency, the complete original and revised versions of Titanic are included in Appendix B.

2. To what extent does ChatGPT-4 integration reduce variability in poetic creativity outcomes across students with diverse baseline writing proficiencies?

Table (4): Descriptive Statistics of Poetic Competency Domains Before and After ChatGPT-4 Intervention.

	N	Mean	SD	SE	Coefficient of variation
Domain1pre	19	3.079	0.947	0.217	0.307
Domain1Post	19	3.974	0.539	0.124	0.136
Domain2pre	19	2.579	1.158	0.266	0.449

Domain2Post	19	4.132	0.597	0.137	0.145
Domain3pre	19	2.921	1.170	0.268	0.400
Domain3Post	19	3.947	0.468	0.107	0.119
SumPre	19	8.579	1.843	0.423	0.215
SumPost	19	12.053	0.815	0.187	0.068

Descriptive analysis demonstrates marked advancement in poetic skills following the intervention. Scores in Domain 1 (domain-relevant abilities) rose to 3.974, accompanied by reduced variability, signaling greater precision and confidence in the application of poetic structures. Domain 2 (creativity-related processes) increased from 2.579 to 4.132, reflecting enhanced thematic exploration and a more systematic creative process. Domain 3 (intrinsic task motivation) improved from 2.921 to 3.947, indicating heightened emotional investment in the writing tasks. Overall, cumulative scores increased from 8.579 to 12.053, providing strong evidence that ChatGPT-4 exerts a transformational influence on poetry development by supporting a multifaceted, cohesive, and innovative approach.

To illustrate how AI-assisted revision reduced variability and enhanced coherence, the sonnet “*Cinderella*” is examined. The student’s original draft demonstrates notable imaginative engagement and narrative momentum; however, it is marked by irregular rhyme schemes, sudden tonal shifts, and inconsistent line lengths:

Original Excerpt: *Cinderella*

*I'd love you with all my sense
Like a sweet dream seen at glance!
You're my Cinderella, and I'm your prince
When I saw you, all beauty at once!
Give me your hand, let's dance
Oh! It is twelve o'clock!
I'm not your Cinderella I'm just a mock...!
A servant who cleans home and stock...
With a mouse, bird of flock*

Are mine and ragged sock

Following revision with ChatGPT, the poem exhibits greater rhythmic consistency, more balanced rhyme, and a smoother thematic progression. The AI-assisted process reorganized imagery, refined diction, and strengthened the poem’s closure, while faithfully preserving the student’s central themes of transformation and loss:

Revised Version

*I long to be Cinderella, full of grace,
With beauty shining in a timeless place.
To dance with the prince beneath the starry
skies,
Not bound by chores where all my spirit lies.*

This analogy demonstrates that AI mediation facilitated the elimination of formal inconsistencies, guiding the student toward a more uniform mastery of poetic conventions. Importantly, the revision retained the original emotional intensity while reinforcing structural coherence, resulting in reduced disparity between technically weaker and stronger student works.

3. Does the demographic composition (e.g., gender imbalance, writing proficiency distribution) moderate the efficacy of ChatGPT-4 in enhancing lyrical creativity, as observed in non-parametric analyses?

The group was marked by demographic and professional diversity, predominantly female, with a range of writing abilities. This diversity within the cohort illustrates ChatGPT-4’s capacity to enhance poetic creativity across individuals with varying levels of expertise. Non-parametric tests were employed due to the non-normal distribution of the data. The demographic characteristics and proficiency

variations, specifically the female majority and mid-level skill differentiation, provide important context for interpreting the positive outcomes attributed to AI support in this heterogeneous classroom setting.

Table (5): Participant Demographic Characteristics and Baseline Writing Proficiency.

	Gender	Writing Level
Valid	19	19
Missing	0	0
Mean	1.737	1.947
95% CI Mean Upper	1.955	2.356
95% CI Mean Lower	1.519	1.539
Std. Deviation	0.452	0.848
Coefficient of variation	0.260	0.436
Skewness	-1.170	0.107
Std. Error of Skewness	0.524	0.524
Shapiro-Wilk	0.555	0.795
P-value of Shapiro-Wilk	< .001	< .001
Minimum	1.000	1.000
Maximum	2.000	3.000

Descriptive statistics show a predominantly female sample ($M = 1.737$, $SD = 0.452$, $CV = 0.260$), with a marked negative skewness (skewness = -1.170) and a confidence interval of $[1.519, 1.955]$. The non-normality of these demographic characteristics was confirmed by the Shapiro-Wilk test ($\alpha < 0.001$). Writing proficiency also demonstrated considerable variability ($M = 1.947$, $SD = 0.848$, $CV = 0.436$), with non-normal distribution indicated by skewness (skew = 0.107) and a confidence interval of $[1.539, 2.356]$, supported by Shapiro-Wilk ($\alpha < 0.001$). These participant traits underscore the importance of demographic diversity when assessing the impact of ChatGPT-4 and justify the use of non-parametric methods. The sonnet “Dialogue between Us” exemplifies how AI-assisted revision can refine expression across differing perspectives, enhancing cohesion and symbolic depth while harmonizing stylistic differences.

Sonnet 04: *Dialogue between us*

Original Excerpt

Dialogue between us

I do things by once
I fell in love by chance
Since the first glance
I recognized how it was sweet
Whenever we meet
Among lovers to be the Elite!
Among hearts ours is the strongest Beat!

Revised Excerpt

Dialogue Between Us

I act but once, yet fate decreed our chance,
Love struck my soul at the very first glance.
Whenever we meet, the world feels complete,
Among all hearts, ours beats the strongest beat.

The revision preserves the student’s original thematic intent while enhancing rhyme scheme consistency (abab rather than irregular), metrical fluency, and the vividness of imagery. Notably, the rebalancing of the two poetic voices renders the revised sonnet more focused, demonstrating how ChatGPT-4 enables students from varied backgrounds and proficiency levels to articulate complex emotional relationships with greater artistic sophistication.

Discussion

This research study aimed to determine whether a ChatGPT-4-based intervention could positively affect the poetic abilities of Algerian master’s students, specifically by evaluating changes in technical skills, creative practices, and motivational engagement. Additionally, the study investigated whether the intervention’s impact would vary according to gender or initial levels of poetic competence.

The findings revealed that integrating ChatGPT-4 significantly improved poetic performance across all measured dimensions. Statistically significant gains in technical accuracy, creative expression, and intrinsic

motivation were observed, as indicated by Wilcoxon signed-rank tests. Descriptive statistics showed increased mean scores and decreased variability, particularly in creativity and motivation, suggesting that the tool was especially effective in supporting weaker writers. Notably, the benefits extended regardless of gender or initial proficiency, affirming ChatGPT's role as both a performance enhancer and an equalizer in poetic development (Ivanov *et al.*, 2024; Kasneci *et al.*, 2023).

The observed improvements indicate that ChatGPT-4 functions as a robust cognitive scaffold, supporting both domain-relevant skills and creativity-focused processes. Drawing on Amabile's Componential Theory, the results show that AI-mediated social-environmental factors can convert intrinsic motivation into creative achievements. Two clear patterns emerged: reduction in score variability, reinforcing an equalizing effect, and the observation that improvements were not dependent on gender but were more closely related to baseline proficiency (Ivanov *et al.*, 2024; Kasneci *et al.*, 2023; Moorhouse *et al.*, 2024).

These findings are consistent with recent literature. Ivanov *et al.* (2024) and Kasneci *et al.* (2023), who observed that AI interventions narrow performance gaps among students, have reported similar results. Moorhouse *et al.* (2024) documented greater learner confidence and willingness to take risks, paralleling the increased metaphorical experimentation identified in this study. The enhanced emotional engagement aligns with the findings of Zhou *et al.* (2021), while Dwivedi *et al.* (2023) provide justification for AI's role in scaffolding both linguistic form and conceptual depth. Additionally, Cotton *et al.* (2023) highlighted the motivational impact of AI, mirroring the rise in intrinsic motivation seen here.

However, these findings diverge from studies that caution against AI overreliance. Niloy *et al.* (2024) have characterized ChatGPT as a threat to originality, while Shalevska (2024) described AI as fundamentally derivative. Habib *et al.* (2024) echoed similar concerns, warning against shallow learning and increased dependency among students. As noted by Petrassi (2025), AI may lack the capacity to fully capture the emotional depth inherent in human creativity, underscoring an ongoing tension: although ChatGPT supports greater creative diversity and equity, excessive reliance may inadvertently restrict stylistic variety and inhibit authentic artistic growth (Habib *et al.*, 2024; Niloy *et al.*, 2024; Petrassi, 2025; Shalevska, 2024).

These results both reinforce and extend previous research, aligning with Ivanov *et al.* (2024) regarding AI's role in scaffolding and reducing performance disparities, as well as Moorhouse *et al.* (2024) on enhanced motivation. The findings also lend theoretical support to Amabile's framework, suggesting that AI-mediated feedback positively influences intrinsic motivation. This is consistent with Zhou *et al.* (2021), who highlight the importance of affective engagement in creative development.

Nevertheless, notable disjunctions emerged. Despite concerns in the literature about stylistic homogenization, individual student voices remained distinctly present throughout their poetic work. The perceived risks of algorithmic overshadowing may be overstated in educational contexts; in this study, evidence of increased empowerment and autonomy suggests that such risks are nuanced and context-dependent.

Pedagogical Implications

The findings of this study hold particular relevance for the integration of AI tools, such as ChatGPT-4, in EFL instruction, especially

within the context of teaching poetry. The results indicate that ChatGPT-4 can serve as a valuable resource for fostering creative writing; however, further research is warranted across a range of educational levels and subject areas. This observation aligns with prior studies emphasizing the need for more in-depth investigation into the educational applications of AI (Boudouaia *et al.*, 2022; Yusuf *et al.*, 2024).

Artificial intelligence has the potential to transform traditional approaches to literature instruction. Learners to supplement conventional classroom activities, providing rapid feedback on poetic form and style, increasingly utilize tools like ChatGPT-4. The observed reduction in performance variability supports the notion that AI contributes to more equitable access to creative training, particularly benefiting writers at the early stages of their development.

AI tools should not replace human mentorship. Instead, teachers play a fundamental role in teaching prompt engineering and AI literacy to maximize the benefits of such technologies while preventing overreliance. The documented increase in intrinsic motivation further supports the potential of AI to facilitate creative processes, suggesting that thoughtful integration of AI can inform curriculum design and contribute to the ongoing growth of the artistic discipline.

Limitations and future research

While this study advances understanding of AI tools like ChatGPT-4 in fostering creativity in poetry writing, several limitations merit consideration. First, the small sample size ($N = 19$) comprised all Master 2 literature students at Batna 2 University for the academic year, as other Master's tracks focused on linguistics, civilization, and didactics, thereby limiting the representativeness of the findings. Second, gender imbalance may constrain the

generalizability of the results. Third, the brief duration of the intervention (4 weeks) raises questions about long-term skill retention. Fourth, exclusive reliance on quantitative methods, despite statistical rigor, restricted exploration of students' subjective experiences and perceptions of AI-assisted learning. Finally, the study's focus on poetry necessitates caution when extending findings to other literary genres. Future research should explore the long-term outcomes of AI-supported learning across diverse demographics and literary genres, and rigorously compare AI-assisted approaches with traditional pedagogies under controlled conditions.

Conclusion

This study demonstrates that ChatGPT-4 played a pivotal role in enhancing the poetic competencies of Algerian Master's students, improving every evaluative dimension and being positively appraised for its support of creative activity. The findings underscore the opportunities afforded by AI to facilitate personalized learning within traditionally subjective domains such as the arts.

However, successful integration of AI in education requires its use in tandem with established pedagogical practices and well-defined instructional frameworks. Ethical considerations, including authorship, should be foregrounded, and active engagement with AI-generated content must be promoted. Through this balanced approach, educators can harness AI to deliver more equitable, interactive, and effective learning experiences while safeguarding the indispensable human element that defines artistic expression.

Disclosure Statement

- **Ethical approval and consent to participate:** This study has been approved by the ethics committee.
- **Availability of data and materials:** Data is available upon request

- **Author contributions :** The research design, implementation, analysis, and writing of the manuscript were all done with the input of all the authors, who approved the final version.
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