

The Impact of AI-Powered Tools on Fostering Students' Creative Writing

Huang Jia Hui¹, Phananoi Rotchu², Parussaya Kiatkheeree³

1 Master of Education in Curriculum and Instruction Suratthani Rajabhat University

2,3 Faculty of Education, Suratthani Rajabhat University

e-mail 67052535101@student.sru.ac.th

Abstract

The advent of generative AI tools such as ChatGPT has transformed educational practices, particularly in creative writing instruction. This study investigates the impact of ChatGPT on university students' creative writing performance using a one-group pre-test/post-test experimental design involving 30 participants from Quanzhou College of Technology. Each student completed two creative writing tasks - one without and one with ChatGPT assistance. Human raters and AI-based tools evaluated originality, elaboration, and stylistic voice. Post-intervention surveys captured students' perceptions of ChatGPT's usefulness, engagement, and authenticity. Results from paired-samples t-tests revealed significant improvements in elaboration after the ChatGPT intervention, while gains in originality and stylistic uniqueness were modest. Survey data indicated high learning satisfaction and engagement, though some students expressed concerns about authenticity and overreliance. These findings suggest that ChatGPT can effectively support idea development and narrative expansion while posing challenges to sustaining individual creative voice. The study offers empirical evidence and pedagogical implications for integrating AI responsibly into creative writing instruction to enhance writing outcomes and learner satisfaction.

Keywords: ChatGPT, creative writing, learning satisfaction, artificial intelligence in education, generative AI, university students, writing instruction, originality, AI-assisted learning

1. Background and Significance of the Problem

The proliferation of generative artificial intelligence (AI), particularly large language models such as ChatGPT, has brought profound implications for education across literacy development, instructional design, and assessment practice (Shin et al., 2021; Kasneci et al., 2023). Among its many applications, the use of ChatGPT in creative writing-an area traditionally valued for originality, coherence, personal expression, and stylistic uniqueness-has raised both enthusiasm and apprehension in educational contexts (Behrens et al., 2025; Marche, 2022). Proponents argue that ChatGPT can function as a cognitive partner that helps students brainstorm, revise, and clarify their ideas (AlAfnan et al., 2023), whereas critics emphasize that its outputs are inherently derivative and often lack the capacity for nuanced storytelling and symbolic depth that characterize high-quality creative writing (Hitsuwari et al., 2023; Landa-Blanco et al., 2023).

Empirical evidence on this question remains mixed. Urban et al. (2024) found that students using ChatGPT in problem-solving tasks demonstrated improved clarity, elaboration, and structure, whereas Niloy et al. (2024) reported that ChatGPT use was associated with diminished originality and stylistic uniqueness in creative writing. These divergent findings underscore the need to empirically evaluate ChatGPT's role in supporting or hindering writing quality, creative competence, and learning

satisfaction, particularly given that its educational impact may be moderated by how it is integrated into pedagogical practice and by learner characteristics such as prior writing ability and attitudes toward AI.

This research is significant for three reasons. First, despite the growing prevalence of AI writing assistants, systematic experimental investigations of their educational impact remain scarce; this study adds methodological rigor by employing a structured pre-test/post-test design (Mollick & Mollick, 2022; Stokel-Walker & Van Noorden, 2023). Second, it provides a nuanced understanding of whether AI supports or compromises students' creative competencies-originality, elaboration, and voice-rather than focusing solely on surface-level metrics such as grammar or fluency (Gervais, 2020). Third, by including students' own perceptions of the learning experience, the study informs pedagogical practice and digital-literacy strategies for the responsible integration of AI into writing instruction.

2. Research Objectives

This study aims to examine the effects of ChatGPT on university students' creative writing performance, focusing on two core dimensions: (1) creative writing ability, evaluated in terms of originality, elaboration, and stylistic uniqueness through both human rating and AI-based scoring, and (2) learning satisfaction, assessed through student surveys capturing perceived usefulness, engagement, confidence, and concerns about authenticity or overreliance. By investigating these two dimensions within a controlled pre-test/post-test design, the study seeks to clarify whether ChatGPT functions as a meaningful support for creative development or poses challenges to sustaining authentic voice and originality.

3. Research Hypotheses

H1: University students' creative writing ability-as measured by originality, elaboration, and stylistic voice-will be significantly higher after ChatGPT-assisted writing than before the intervention.

H2: University students will report an overall positive level of learning satisfaction, in terms of perceived usefulness, engagement, and confidence, following the integration of ChatGPT into the creative writing process.

4. Scope of the Research

The study is guided by a conceptual framework in which the use of ChatGPT during creative writing serves as the independent variable, while creative writing ability (originality, elaboration, and voice) and learning satisfaction (attitudes, cognitive experience, and perceived benefit) serve as the dependent variables; gender, discipline, baseline writing ability, and prior familiarity with ChatGPT were treated as control variables. The population comprised undergraduate students at Quanzhou College of Technology, and a sample of 30 students was recruited through purposive sampling to ensure diversity in academic background, language proficiency, and prior exposure to AI-assisted writing tools. Inclusion required full-time enrollment, at least intermediate English proficiency, and basic computer literacy. The study was conducted at Quanzhou College of Technology, China, within a single instructional term comprising a pre-test, a ChatGPT orientation and practice phase, a post-test, and a post-intervention satisfaction survey.

5. Research Methodology

This study adopted a quantitative, one-group pre-test/post-test experimental design. All 30 participants completed a creative writing task without ChatGPT assistance (pre-test) to establish baseline performance across five rubric dimensions—clarity, coherence, originality, elaboration, and style. Students then received guided instruction on using ChatGPT for brainstorming, elaboration, linguistic refinement, and revision, followed by supervised independent practice. Participants subsequently completed a second creative writing task of comparable genre and difficulty with ChatGPT assistance (post-test), and immediately after, responded to a structured learning satisfaction survey. This within-subject design enabled direct comparison of each participant's performance before and after the intervention while controlling for individual differences in writing ability.

6. Research Instruments

Three main instruments were used. First, OpenAI's ChatGPT served as the instructional technology, accessed through a web-based interface on uniform computer workstations. Second, writing performance was evaluated using a rubric adapted from Todd et al. (2019), assessing clarity, coherence, originality, elaboration, and stylistic uniqueness; two trained human raters scored each submission independently, supplemented by AI-based textual analysis for linguistic accuracy and syntactic complexity. Third, a learning satisfaction questionnaire, administered through Google Forms, combined Likert-scale items and open-ended prompts to capture perceived usefulness, ease of use, engagement, and concerns about authenticity. All instruments underwent expert content review and pilot testing, with items revised or removed where internal consistency, assessed through Cronbach's alpha, was low.

7. Data Collection

Data were collected electronically over the course of the intervention. Pre-test writing samples were gathered before any ChatGPT exposure; post-test samples were collected after the guided orientation and supervised practice phase; and the satisfaction survey was administered immediately following the post-test. All writing samples were anonymized and coded prior to rating. Two trained raters independently scored every script using the validated rubric, with discrepancies resolved through discussion, and AI-based analysis tools supplemented the human evaluation to provide consistent linguistic indices across all submissions.

8. Data Analysis

Quantitative data were analyzed using paired-samples t-tests to compare pre-test and post-test scores for each writing dimension, with Cohen's d computed to estimate effect size. Descriptive statistics summarized the learning satisfaction survey results, and open-ended responses were analyzed thematically to identify recurring qualitative patterns in students' reflections. All quantitative analyses were conducted using SPSS.

9. Research Summary

All 30 participants completed both the pre- and post-tests as well as the satisfaction survey, with no attrition. Table 1 summarizes the descriptive statistics for the three creative writing dimensions that showed the largest change between testing points.

Table 1. Descriptive Statistics for Writing Dimensions (Pre- and Post-Test, N = 30)

Variable	Pre-Test M (SD)	Post-Test M (SD)	Mean Difference	t(29)	p	Cohen's d
Originality	3.03 (0.39)	3.35 (0.44)	0.32	1.54	.13	0.28
Elaboration	2.93 (0.41)	4.05 (0.46)	1.12	3.95	<.01	0.72
Style/Voice	3.03 (0.38)	3.55 (0.43)	0.52	1.98	.06	0.36

Originality did not change significantly from pre- ($M = 3.03$) to post-test ($M = 3.35$), $t(29) = 1.54$, $p = .13$, indicating that ChatGPT did not substantially enhance students' capacity for novel idea generation; qualitative feedback described ChatGPT's suggestions as "useful but predictable." Elaboration, by contrast, improved significantly, $t(29) = 3.95$, $p < .01$, $d = 0.72$, showing that ChatGPT helped students expand details and enrich narrative content. The change in style and voice approached but did not reach significance, $t(29) = 1.98$, $p = .06$, with some raters noting "formulaic phrasing" typical of AI-generated language.

Survey results indicated broadly positive learning satisfaction: 93% of participants rated ChatGPT as easy or very easy to use, 87% reported that it helped them overcome writer's block, and 80% found the writing process more enjoyable and interactive. Responses to its impact on creativity were mixed, with 60% feeling that ChatGPT stimulated ideas and 40% believing it limited their originality, while half of the students expressed concern about overreliance and loss of personal voice. The overall satisfaction mean was 3.8 on a 5-point scale. Thematic analysis of open-ended responses identified four recurring themes: ChatGPT as a helpful brainstorming partner, perceived gains in clarity and organization, concern about diminished authentic voice, and reflective comparison between students' own drafts and ChatGPT-generated text.

10. Discussion

The results show that ChatGPT had a differentiated impact on students' creative writing ability. Elaboration improved the most, consistent with reports that ChatGPT helped students overcome writer's block by offering concrete examples and alternative phrasings that they could adapt to expand their narratives with greater depth and detail. Gains in originality and stylistic uniqueness were, however, modest, suggesting that ChatGPT operates primarily as a linguistic and organizational scaffold rather than as a catalyst for genuinely novel ideas or distinctive personal voice. This is consistent with Niloy et al. (2024), who similarly found limited gains in originality, and stands in partial contrast to Urban et al. (2024), whose participants showed improved clarity and structure; together these findings suggest that AI's contribution to creativity may depend on how the tool is pedagogically integrated.

Three factors appear to explain the limited influence on originality and voice. First, because ChatGPT generates text from statistical patterns in its training data, its suggestions tend to follow familiar narrative structures and conventions, which students themselves described as “useful but predictable.” Second, adopting AI-generated phrasing risked a homogenization of voice, with several students reporting that their writing felt less personal after using the tool. Third, students noted a tension between convenience and creativity: the ease of ChatGPT assistance sometimes reduced their motivation to explore their own ideas exhaustively. These patterns indicate that creativity in narrative writing depends on personal experience, imagination, and stylistic experimentation that AI cannot fully replicate (Gervais, 2020; Hitsuwari et al., 2023).

With respect to learning satisfaction, students generally reported increased confidence and engagement, describing ChatGPT as an accessible, non-judgmental support that reduced writing anxiety and made the process feel more interactive. At the same time, concerns about authenticity and overreliance were evident, with some students questioning whether their final texts could still be considered fully their own. This dual pattern suggests that learning satisfaction with AI-assisted writing is closely tied not only to convenience and support but also to students' sense of authorship and ownership, and that reflective comparison between one's own drafts and AI output may itself contribute to metacognitive development.

11. Suggestions/Recommendations

Several practical implications follow from these findings for the responsible integration of ChatGPT into creative writing instruction. First, ChatGPT should be positioned as a scaffold rather than a substitute: it is most valuable for brainstorming, vocabulary expansion, and idea elaboration, and teachers should guide students to use it selectively rather than for full text generation. Second, instructors should encourage revision and personalization by asking students to treat ChatGPT's outputs as draft suggestions to be rewritten in their own voice, strengthening stylistic awareness and ownership. Third, incorporating reflective writing-in which students explicitly describe how ChatGPT influenced their ideas and which elements they retained, modified, or rejected-can foster metacognitive awareness and mitigate overreliance. Fourth, designing assignments around personal memory, cultural context, or emotion can naturally limit the usefulness of generic AI suggestions and keep student creativity central. Finally, explicit instruction in ethical and responsible AI use, addressing what counts as appropriate assistance, how to balance AI support with originality, and how to avoid misrepresentation, can help students develop sound digital-literacy habits.

This study is limited by its relatively small sample of 30 students from a single institution and its short intervention period; future research should involve larger and more diverse populations and longer-term designs to examine whether originality improves as students learn to use AI more creatively rather than adopting its suggestions directly. Future studies could also compare different instructional strategies for integrating AI, varying the level of guidance, training, and reflective activity provided, to identify approaches that best balance efficiency with the preservation of authentic creative voice.

12. References

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