

THE EFFECT OF LOCAL CULTURE-THEMED STORY WRITING TRAINING WITH ARTIFICIAL INTELLIGENCE TOOLS ON PRE-SERVICE TEACHERS' WRITING PERFORMANCE IN THE ESSENTIAL WRITING SKILLS COURSE AT UNIVERSITAS LANCANG KUNING

Pratiwi Dinata Halim^{1*}, Herlinawati Herlinawati²
Universitas Lancang Kuning, Pekanbaru, Indonesia
*Corresponding email: phdtiwi26@gmail.com

Abstract

This study aimed to examine the effect of local culture-themed story writing training with artificial intelligence tools on the writing performance in first semester pre-service teachers. A quasi-experimental design with a one-group posttest-only approach was employed, involving 24 first-semester students from Class 1.1 who were enrolled in the Essential Writing Skills course. The instructional treatment was integrated with local culture themes (traditional houses, clothes, traditions, and games) with AI-assisted writing activities using ChatGPT across four training sessions. Students' writing performance was assessed using an analytic rubric covering five dimensions: content, organization, vocabulary, language use, and mechanics. Data were analyzed using descriptive statistics and one-sample t test. The results show that the post-test score ($\bar{x} = 82.85$) significantly exceeded the predetermined criterion ($t = 20.706$, $p < 0.05$). Among the assessed dimensions, content demonstrated was the highest performance ($M = 25.60$), followed by language use ($M = 19.85$), organization ($M = 17.04$), vocabulary ($M = 16.46$), and mechanics ($M = 3.90$). The study concludes that the integration of local culture themes and AI tools functioned synergistically as structured instructional support, with cultural familiarity facilitating idea generation and AI assistance supporting linguistic and organizational management throughout the writing process.

Keywords: AI-Assisted Writing, Local Culture-Themed Writing, Narrative Writing Pre-Service Teachers, , Writing Performance

1. INTRODUCTION

Local culture has long been recognized as an essential component of education, particularly in language learning and literacy development. Integrating local wisdom into writing instruction helps learners connect academic tasks with their cultural experiences, strengthening cultural identity while increasing engagement and creativity. When students are encouraged to draw on familiar cultural contexts, they are more likely to produce meaningful narratives that reflect personal understanding and authentic expression. Previous studies support this view. Hastuti et al. (2023) found that local wisdom based digital media strengthened university students' short story writing by fostering deeper engagement with cultural content. Cultural references function as cognitive resources, enabling students to generate ideas more confidently and to establish stronger conceptual links in their writing.

For pre-service teachers, cultural relevance in writing instruction holds even greater importance because it is closely tied to effective and contextualized pedagogy. As future

educators, they are expected not only to master writing skills but also to design instruction that resonates with learners' backgrounds. Local culture-themed story writing offers a meaningful space for developing creative expression while reinforcing pedagogical awareness. To support this process, structured writing training becomes essential. Training provides a systematic framework for developing writing competence through guided practice, explicit instruction, and reflective application. When cultural content is embedded within such training, it helps pre-service teachers organize ideas more coherently, sustain motivation, and develop narratives that feel personally meaningful rather than mechanically produced.

Research on creative writing training further illustrates its broader value in teacher development. Martin et al. (2021) reported that teachers who participated in structured creative writing activities experienced growth across personal, social, pedagogical, and professional dimensions. Engaging in writing as writers enabled them to gain confidence, discover their authentic voices, and better understand students' writing difficulties. This experience strengthened their ability to model writing processes and provide constructive feedback. For pre-service teachers in EFL contexts, this dual role as developing writers and future writing instructors is particularly challenging. They must build proficiency in a foreign language while preparing to teach writing effectively. Culturally meaningful writing tasks can ease this challenge by providing familiar contexts that support both linguistic development and pedagogical understanding.

Alongside the growing emphasis on culturally grounded writing instruction, recent advances in generative Artificial Intelligence (AI) have introduced new possibilities for supporting writing development in higher education. AI supported tools are increasingly used to assist idea generation, organization, and revision. Research suggests that generative AI can enhance productivity and improve writing performance by offering immediate and individualized support (Farrelly & Baker, 2023). When AI tools are combined with culturally grounded writing tasks, they can complement one another effectively. Cultural themes provide meaningful contexts that reduce cognitive load during composition, while AI tools help writers refine language, structure ideas, and revise texts more efficiently (Ismail et al., 2024).

Despite these potential benefits, the integration of AI in writing instruction also raises important pedagogical concerns. Overreliance on AI tools may limit learners' autonomy and weaken their engagement with core writing processes, particularly when digital literacy is limited (Wang et al., 2023). Effective implementation therefore requires careful instructional design that ensures learners remain actively involved in planning, drafting, and evaluating their own writing (Teng, 2024). For pre-service teachers, this balance is especially critical. They must develop not only strong writing skills but also the ability to critically evaluate AI generated suggestions and model ethical technology use in their future classrooms.

Although interest in AI assisted writing continues to grow, existing studies rarely connect the use of AI with culturally grounded writing tasks. Studies by Hezam & Alkhateeb (2024) and Salman et al. (2024) have shown that AI tools can support creativity and writing development; however, their work primarily focuses on general creative writing rather than narratives rooted in specific cultural contexts. At the same time, research on culturally based writing instruction has largely relied on conventional digital tools, leaving the role of generative AI particularly ChatGPT relatively underexplored. Taken together, these studies suggest that while AI shows promise in supporting writing, its use has not yet been sufficiently examined in relation to culturally meaningful writing tasks within structured instructional settings.

This gap becomes clearer when looking at recent empirical research, such as the study by Bircan et al. (2025), which indicates that the effectiveness of AI supported story writing may vary

across educational and cultural contexts. Conducted in Turkey, their study explored AI assisted story writing through STEM-themed narratives and reported positive outcomes. However, the study did not focus on culturally grounded narratives nor explicitly examine students' writing performance. Given that cultural background, educational traditions, and learners' experiences differ across countries, it is possible that the effectiveness of AI assisted writing may produce different results in other cultural and national contexts. This highlights the importance of examining how AI assisted writing functions when local cultural content becomes central to the writing task, particularly in contexts beyond those previously studied.

This issue is particularly visible in the Indonesian context, especially at Universitas Lancang Kuning in Pekanbaru. Preliminary interviews with writing instructors conducted in December 2024 reveal that many first semester pre-service teachers in the English Language Education program experience significant difficulties in writing, such as developing coherent content, organizing ideas logically, and creating engaging storylines. These challenges are commonly found in the Essential Writing Skills course, a core first semester subject designed to build students' fundamental writing competencies in English. Although the course syllabus aims to develop students' ability to produce well organized, coherent, and linguistically accurate texts across various genres, including narrative writing, instructors report that many students struggle to meet these learning outcomes, particularly in constructing narratives that demonstrate both structural coherence and creative expression.

First semester students represent a critical group, as early instructional experiences strongly influence their long term writing development and the formation of their professional identities as future English teachers. At this foundational stage, students are expected not only to improve their English writing proficiency but also to begin shaping their identities as writing instructors. Moreover, they bring rich local cultural knowledge derived from family traditions, regional folklore, and community values, which can serve as authentic resources for story writing. However, the integration of these cultural resources with AI assisted writing instruction has not yet been explored in this context, revealing a pedagogical gap that needs to be addressed through systematic research.

Considering these gaps, integrating local culture-themed story writing with AI tools through a structured training program represents a promising pedagogical approach. Such an approach has the potential to enhance writing performance, strengthen cultural identity, and develop digital literacy while supporting pre-service teachers' pedagogical preparation. Therefore, this study seeks to examine the effect of local culture-themed story writing training with artificial intelligence tools on the writing performance of first semester pre-service teachers in the Essential Writing Course at Universitas Lancang Kuning.

2. METHOD

This study employed a quantitative approach using a quasi-experimental design to examine the effect of local culture-themed story writing training integrated with artificial intelligence (AI) tools on students' writing performance. Specifically, the study applied a one-group posttest-only design in which participants received instructional treatment before their writing performance was assessed. This design was selected to evaluate how the integration of culturally grounded writing tasks and AI-assisted support functioned within a structured training program. The participants of this study were first-semester pre-service teachers enrolled in the Essential Writing Skills course at Universitas Lancang Kuning. A total of 24 students participated in the study and were selected using purposive sampling based on their enrollment in the course

during the academic semester in which the research was conducted. As beginner-level university students in an EFL context, the participants were considered appropriate for examining the effectiveness of the instructional approach implemented in this research.

The primary instrument used to measure students' writing performance was a writing test administered at the end of the training sessions. Students were required to produce a narrative story based on local culture themes introduced during the instructional activities. Their written texts were evaluated using an analytic writing rubric consisting of five components: content, organization, vocabulary, language use, and mechanics. Content referred to the clarity and development of ideas in the narrative, while organization assessed the logical sequencing and coherence of the text. Vocabulary evaluated the appropriateness and variety of lexical choices, language use measured grammatical accuracy and sentence construction, and mechanics included aspects such as spelling and punctuation. This rubric enabled a comprehensive evaluation of students' narrative writing performance.

The instructional procedure was conducted through structured writing training sessions that integrated local culture themes with AI-assisted support. Cultural topics such as traditional games, traditional clothing, traditional houses, and local traditions were introduced to stimulate students' ideas and encourage culturally grounded storytelling. During the training, students were also introduced to the use of generative AI tools to support several stages of the writing process, including brainstorming ideas, organizing outlines, and refining language use. However, students remained responsible for developing their own narratives, while AI tools functioned only as supportive resources within the writing process. The training activities were carried out through several stages, including brainstorming, outlining, drafting, and revising. In the brainstorming stage, students explored possible story ideas related to local cultural themes. During the outlining stage, they organized their narrative structures with the assistance of AI-generated suggestions. In the drafting stage, students developed their stories by elaborating their outlines while using AI tools for language support. Finally, during the revision stage, students reviewed and refined their texts to improve clarity, coherence, and linguistic accuracy.

The data obtained from the writing tests were analyzed using descriptive and inferential statistics. Descriptive statistics were used to summarize the overall writing performance of the participants across the five components of the writing rubric. To determine whether the instructional treatment had a significant effect on students' writing performance, a one-sample t-test was employed. This statistical test was used to examine whether the mean score of students' writing performance differed significantly from the predetermined benchmark. The analysis was conducted using statistical software with a significance level set at 0.05, and the results were interpreted to evaluate the effectiveness of integrating local culture-themed story writing training with AI tools in improving students' writing performance.

3. RESULTS

The findings of this study present the results of students' writing performance after participating in the local culture-themed story writing training integrated with artificial intelligence (AI) tools. The writing performance of the participants was evaluated using an analytic scoring rubric consisting of five components: content, organization, vocabulary, language use, and mechanics. These components were used to obtain a comprehensive picture of students' narrative writing ability after completing the instructional treatment. Descriptive statistical analysis was employed to summarize the students' scores and to identify patterns in their writing performance across the different components.

Table 1. Descriptive Statistics of Students' Writing Scores

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Post-test Score	24	76.50	89.50	82.85	3.04

The results indicate that the students achieved a relatively high level of writing performance after participating in the training program. The overall mean score obtained by the participants was 82.85, which suggests that most students were able to produce narrative texts with sufficiently developed ideas, logical organization, and generally acceptable linguistic accuracy. This mean score reflects that the majority of students were able to complete the writing task successfully and demonstrate their ability to construct coherent narrative texts based on the assigned themes.

Table 2. Descriptive Statistics of Writing Components

Writing Component	N	Mean	Std. Deviation
Content	24	25.60	1.02
Organization	24	17.04	0.55
Vocabulary	24	16.46	0.82
Language Use	24	19.85	0.88
Mechanics	24	3.90	0.44

Further analysis of the descriptive statistics shows that the content component obtained the highest mean score (25.60) among the five assessed aspects. This result indicates that students were generally able to generate and elaborate ideas effectively in their narratives. Many students were able to present storylines that contained relevant details, clear themes, and logical sequences of events. The relatively high performance in this component suggests that students experienced fewer difficulties in generating ideas compared to other aspects of writing.

The language use component obtained the second highest mean score (19.85). This indicates that students were able to construct sentences with generally appropriate grammatical structures and maintain a reasonable level of linguistic accuracy. Although several minor grammatical errors were identified in the students' texts, these errors did not significantly disrupt the meaning or overall clarity of the narratives. The results suggest that the students were able to maintain grammatical control while focusing on expressing their ideas.

The organization component also showed satisfactory performance with a mean score of 17.04. This finding suggests that most students were able to structure their narratives in a relatively coherent manner. In many of the students' texts, the narrative structure followed a recognizable pattern consisting of an orientation, a sequence of events or complications, and a resolution. This indicates that the instructional activities conducted during the training program helped students understand how to arrange their ideas into a clear narrative structure.

The vocabulary component obtained a mean score of 16.46, indicating that students were generally able to select appropriate words to convey their ideas. However, some limitations in lexical variation were still observed in several texts. While students were able to communicate their ideas clearly, the range of vocabulary used in the narratives was sometimes limited. This suggests that vocabulary development remains an area that can be further strengthened in future writing instruction.

The mechanics component, which includes spelling, punctuation, and capitalization, obtained the lowest mean score (3.90). Although minor mechanical errors were present in several students' texts, these errors were generally not severe enough to hinder the readability of the narratives. Overall, the results indicate that students were able to produce understandable texts despite some minor inaccuracies in writing conventions.

To examine whether the instructional treatment had a statistically significant effect on students' writing performance, a one-sample t-test was conducted. This analysis was used to determine whether the students' mean score differed significantly from the predetermined benchmark score.

Table 3. One-Sample t-Test Result

Variable	N	Mean	SD	T	df	Sig. (2-tailed)	Mean Difference	95% CI Lower	95% CI Upper
Post-test Score	24	82.85	3.04	20.706	23	.000	12.85	11.57	14.14

The results of the statistical analysis revealed a t-value of 20.706 with a significance level of $p < 0.05$, indicating that the mean score of students' writing performance was significantly higher than the benchmark value. This statistical result demonstrates that the instructional treatment implemented in this study had a significant positive effect on students' writing performance. Therefore, the integration of local culture-themed story writing training and AI-assisted tools can be considered effective in supporting the development of narrative writing skills among first-semester pre-service teachers.

Overall, the findings indicate that students were able to produce narrative texts with relatively strong performance in the areas of idea development and sentence construction, while still demonstrating moderate limitations in vocabulary variety and writing mechanics. These results provide a foundation for further interpretation of how the instructional strategy influenced students' writing development.

4. DISCUSSION

The results of this study indicate that the integration of local culture-themed story writing training with artificial intelligence (AI) tools contributed positively to students' writing performance. The relatively high mean score achieved by the participants suggests that students were able to develop narrative texts with clear ideas, logical organization, and acceptable linguistic accuracy. These results imply that combining culturally meaningful writing tasks with technological support can create a learning environment that facilitates both idea development and language improvement. In this context, the training program not only encouraged students to engage actively in the writing process but also provided structured support that helped them produce more coherent narratives.

One factor that may explain the improvement in students' writing performance is the use of local culture themes during the writing activities. When students were asked to write stories related to familiar cultural topics such as traditional games, traditions, or other elements of local culture, they were able to draw upon their own experiences and background knowledge. This familiarity likely reduced the cognitive challenges often faced by students when generating ideas for writing tasks. As a result, students could focus more on developing the storyline and organizing their narratives rather than struggling to find topics to write about. The presence of culturally relevant themes may therefore have facilitated more meaningful expression and clearer story development. This finding supports previous research indicating that integrating local cultural content in language learning can help students connect learning materials with their personal experiences and improve their engagement in writing activities (Hastuti et al., 2023).

In addition to the role of cultural familiarity, the integration of AI tools provided important support throughout the writing process. During the training sessions, AI-assisted tools were used to help students at several stages of writing, including brainstorming ideas, organizing story

outlines, and revising drafts. This assistance enabled students to manage the writing process more effectively and overcome difficulties related to language use and text organization. Previous studies have also highlighted that AI technologies can assist learners in generating ideas and improving their written texts by providing suggestions for vocabulary and sentence construction (Salman et al., 2024).

The results of this study also highlight the complementary relationship between culturally meaningful writing tasks and AI-assisted support. Cultural themes appeared to stimulate students' creativity and engagement, while AI tools functioned as supportive resources that helped refine the linguistic aspects of their writing. This combination may explain why the content component received the highest score among the assessed aspects of writing performance. Students were able to focus on developing ideas and narratives while using AI tools to improve the structure, vocabulary, and clarity of their texts. Similar findings have been reported in studies showing that AI-assisted learning environments can support students in organizing their ideas and improving the overall quality of their writing (Hezam & Alkhateeb, 2024).

These findings are also consistent with research on writing development among pre-service teachers. Previous studies indicate that although pre-service teachers may demonstrate adequate ability in developing content and organizing ideas, they often still experience challenges related to grammar and language accuracy. Research conducted by Kabaran and Altıntaş (2022) found that pre-service teachers frequently need additional instructional support to improve the linguistic aspects of their writing. Therefore, integrating supportive learning strategies can help address these challenges and strengthen students' overall writing performance.

Furthermore, the findings also indicate that structured guidance in the use of AI tools played an important role in supporting students' writing development. In this study, AI was not used as a replacement for students' own writing efforts, but rather as a supportive tool during specific stages of the writing process. Students were guided to use AI for generating ideas, developing outlines, and revising drafts, while still maintaining responsibility for the content of their narratives. This guided approach helped ensure that students remained actively engaged in constructing their texts. Similar perspectives have been highlighted in studies suggesting that AI tools should be integrated carefully within instructional activities to support learning without reducing students' independent thinking (Tseng & Lin, 2024).

Another important implication of these findings relates to the preparation of pre-service teachers in integrating technology into language learning. As participants in this study were first-semester pre-service teachers, their experience with AI-supported writing activities may contribute to their future pedagogical practices. By experiencing how AI tools and culturally meaningful topics can be integrated into writing instruction, pre-service teachers may develop greater awareness of innovative teaching strategies. Research by Yusuf et al. (2024) also emphasizes that integrating culturally relevant learning materials can help future teachers design more meaningful and engaging classroom activities.

Overall, the findings of this study contribute to the growing body of research on AI-assisted writing in educational contexts. While many previous studies have focused on the general use of AI tools in writing instruction, this study highlights the potential benefits of combining AI technologies with culturally grounded instructional approaches. The results suggest that when AI is used as a supportive learning resource and integrated within meaningful learning tasks, it can enhance students' writing performance while maintaining their active participation in the writing process. Therefore, integrating AI tools with culturally responsive instruction may offer a promising approach for improving writing instruction in English language education.

5. CONCLUSION

This study aimed to examine the effect of local culture-themed story writing training supported by artificial intelligence tools on the narrative writing performance of first-semester pre-service teachers in the Essential Writing Skills course at Universitas Lancang Kuning. The findings demonstrate that the integration of culturally familiar writing themes and guided AI support contributed positively to students' narrative writing performance, enabling them to achieve the expected level based on the applied scoring rubric. The results also indicate that narrative writing development involves multiple components, with content and organization showing stronger performance compared to vocabulary use and mechanics. More importantly, this study highlights that combining culturally grounded writing tasks with structured AI assistance can provide meaningful pedagogical support for developing narrative writing skills. In this way, the study contributes to the growing discussion on the integration of AI tools in language education by demonstrating how culturally relevant contexts and guided technology use can be combined to support writing instruction in English language learning.

REFERENCES

- Bircan, M. A., Şeref, İ., & Nacaroğlu, O. (2025). The Effect of STEM Themed Story Writing Training with Artificial Intelligence Tools on the Digital Literacy and 21st Century Skills of Preservice Teachers. *Education and Information Technologies*, 30, 21479–21498. <https://doi.org/10.1007/s10639-025-13625-2>
- Farrelly, T., & Baker, N. (2023). Generative Artificial Intelligence: Implications and Considerations for Higher Education Practice. *Education Sciences*, 13(11). <https://doi.org/10.3390/educsci13111109>
- Göçen Kabaran, G., & Altıntaş, S. (2022). Effectiveness of the Project Writing Training Developed for Pre-Service Primary Teachers. *Journal of Education and Learning (EduLearn)*, 16(3), 308–317. <https://doi.org/10.11591/edulearn.v16i3.20519>
- Hastuti, S., Slamet, Sumarwati, & Rakhmawati, A. (2023). Short Story Writing Learning Based on Local Wisdom with Digital Book Media for University Students. *International Journal of Instruction*, 16(1), 821–832. <https://doi.org/10.29333/iji.2023.16146a>
- Hezam, A. M. M., & Alkhateeb, A. (2024). Short Stories and AI Tools: An Exploratory Study. *Theory and Practice in Language Studies*, 14(7), 2053–2062. <https://doi.org/10.17507/tpls.1407.12>
- Ismail, Rahmat, & Assidiq, I. (2024). Academic Writing Acceleration: Investigating the Impact of Artificial Intelligence (AI) Applications on Academic Writing Efficiency. *Proceedings Series on Proceedings of Multidisciplinary Sciences*, 1(1), 256.
- Martin, A., Tarnanen, M., & Tynjälä, P. (2021). Narratives of Professional Development in a Teachers' Creative Writing Group. *New Writing*, 18(4), 480–495. <https://doi.org/10.1080/14790726.2021.1900274>
- Salman, H., Imran, A., Niazi, S., Rahat, A., Arif, A., Anjum Buriro, S., & Muhammad Butt, S. (2024). Artificial Intelligence in Higher Education: Strategies for Fostering Creativity in Writing Instruction. *Migration Letters*, 21(S8), 1089–1097.
- Teng, M. F. (2024). A Systematic Review of ChatGPT for English as a Foreign Language Writing: Opportunities,

- Challenges, and Recommendations. *International Journal of TESOL Studies*, 6(3), 36–57.
<https://doi.org/10.58304/ijts.20240304>
- Tseng, Y. C., & Lin, Y. H. (2024). Enhancing English as a Foreign Language (EFL) Learners' Writing with ChatGPT: A University-Level Course Design. *Electronic Journal of E-Learning*, 22(2), 78–97.
<https://doi.org/10.34190/ejel.21.5.3329>
- Wang, T., Lund, B. D., Marengo, A., Pagano, A., Mannuru, N. R., Teel, Z. A., & Pange, J. (2023). Exploring the Potential Impact of Artificial Intelligence (AI) on International Students in Higher Education. *Applied Sciences*, 13(11). <https://doi.org/10.3390/app13116716>
- Yusuf, N. N., Sumiyadi, S., & Nugroho, R. A. (2024). Integrasi Legenda Urban dalam Model Pembelajaran Menulis Cerita Fantasi di SMP. *Jurnal Onoma: Pendidikan, Bahasa, dan Sastra*, 10(3), 2985–2997.
<https://doi.org/10.30605/onoma.v10i3.4036>