

The Effect of the Use of AI Chatbots on the Ability to Write Anecdotal Texts for Class X Students of SMK Negeri 1 Percut Sei Tuan for the 2025/2026 Academic Year

Giska Antika ^{a1*}, Mhd. Isman ^{b2}

^{*1} Universitas Muhammadiyah Sumatera Utara, Indonesia

² Universitas Muhammadiyah Sumatera Utara, Indonesia

^agiskaantika03@gmail.com ; ^bbmhd.isman@umsu.ac.id

^{*}Correspondent Author; giskaantika03@gmail.com

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ABSTRACT

The development of artificial intelligence (AI) technology provides new opportunities in language learning, particularly in improving students' writing skills. This study aims to examine the effect of using AI Chatbots on the ability of grade X students at SMK Negeri 1 Percut Sei Tuan to write anecdotal texts during the 2025/2026 academic year. This study employed a quantitative approach with a quasi-experimental method using a Pretest-Posttest Control Group Design. The population consisted of 750 grade X students, with 30 students from class X-1 TJTL selected as the experimental group and 25 students from class X-3 TJTL as the control group. The research instrument was an essay test measuring students' anecdotal text writing ability. Data were analyzed using descriptive statistics, normality and homogeneity tests, followed by an Independent Samples t-Test to examine differences between groups. The results showed that the experimental group improved from a mean pretest score of 48.33 to 67.29 in the posttest, representing an increase of 18.96 points, while the control group increased from 42.75 to 60.00, representing an increase of 17.25 points. The statistical analysis indicated a significant difference between the two groups ($p = 0.022 < 0.05$), indicating that the use of AI Chatbots had a significant effect on students' anecdotal text writing ability. The effect size analysis showed that the intervention produced a [small/moderate/large] practical effect (Cohen's $d = [\text{value}]$), demonstrating the contribution of AI Chatbots in supporting students' writing development.

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Introduction

Indonesian language learning plays an important role in developing students' communication skills, both orally and in writing. Communication skills are among the essential competencies required in the 21st century, enabling students to convey ideas, information, and arguments clearly, logically, and systematically. Through Indonesian

language learning, students are not only expected to understand linguistic rules but also to develop critical and creative thinking skills through various forms of texts. One of the important skills that needs to be developed is writing ability because writing activities train students to organize ideas and express thoughts in a structured manner.

Writing skills remain one of the challenges faced by students in Indonesian language learning. Many students experience difficulties in generating ideas, developing content, organizing text structures, and applying appropriate linguistic elements. These difficulties are also found in anecdotal text writing. According to (Ayuningsih et al., 2025) students still face obstacles in determining ideas, constructing text structures, and developing linguistic features of anecdotal texts, resulting in writing products that do not fully represent the characteristics of the genre. In the Independent Curriculum, anecdotal text writing is one of the competencies expected from grade X vocational high school (SMK) students. Anecdotal texts are short narrative texts that contain humor and convey criticism or social messages through interesting and indirect expressions (Rahmah & Qur'ani, 2021) and (Panggabean et al., 2026).

Therefore, writing anecdotal texts requires not only understanding text structure but also creativity in developing ideas and presenting criticism effectively. Based on preliminary observations conducted during the PLP III activities at SMK Negeri 1 Percut Sei Tuan, students' anecdotal text writing abilities were still not optimal. Students experienced difficulties in determining topics, developing ideas, organizing text structures, and applying appropriate language conventions. The texts produced by students tended to be simple, lacked creativity, and had not effectively demonstrated humor and social criticism as the main characteristics of anecdotal texts. Furthermore, students showed low engagement in writing activities because they considered writing difficult, particularly when generating and developing ideas. The learning process, which still relied mainly on conventional approaches, provided limited opportunities for students to explore ideas, practice independently, and receive feedback on their writing.

The development of digital technology provides new opportunities to overcome these challenges, particularly through the integration of Artificial Intelligence (AI) in learning. AI-based learning tools can provide interactive assistance that supports students during the writing process, including generating ideas, organizing text frameworks, improving paragraph development, and providing feedback on language use (Celik et al., 2022). One form of AI technology that has attracted attention in education is AI Chatbot, such as ChatGPT, which enables students to receive immediate writing support and engage in a more interactive learning process. Several previous studies have reported the potential of AI-based tools in language learning. Research (Nurmalina & Pebriana, 2025) found that AI Chatbots can assist students in developing ideas and organizing texts more systematically, while (Syaukani et al., 2025) reported that AI-supported learning media can improve student motivation and engagement. Similarly (Rusniasa et al., 2021) showed that innovative learning media contribute to improving students' literacy activities. However, previous studies have primarily focused on students' perceptions, learning motivation, or general writing ability rather than examining the effectiveness of AI Chatbots on specific writing genres.

Despite the growing interest in AI-assisted writing, empirical evidence regarding the use of AI Chatbots for anecdotal text writing among vocational high school students remains limited. Previous studies have not sufficiently explored whether AI Chatbots can significantly improve students' ability to produce anecdotal texts, particularly in the context of SMK students who have specific learning characteristics related to communication skills, creativity, and digital literacy. Furthermore, experimental studies using a controlled design to compare students' writing performance before and after AI Chatbot implementation are

still limited. Therefore, this study aims to address this research gap by experimentally examining the effect of AI Chatbot use on anecdotal text writing ability among grade X students of SMK Negeri 1 Percut Sei Tuan. This study contributes by providing empirical evidence regarding the effectiveness of ChatGPT as an instructional medium through a Pretest-Posttest Control Group Design, comparing the writing performance of students who receive AI Chatbot-assisted learning with those who receive conventional instruction. The contribution of this study is focused on measuring improvements in anecdotal text writing skills based on writing aspects, including content development, text structure, language use, and linguistic features.

Method

This study employed a quantitative approach using a quasi-experimental research design. The research design used was the Non-equivalent Pretest-Posttest Control Group Design to examine the effect of AI Chatbot-assisted learning on students' anecdotal text writing ability (Weyant, 2022). A quasi-experimental design was selected because the researcher used existing classroom groups (*intact classroom groups*) without randomly assigning individual students to experimental and control groups. This design allows researchers to evaluate the effectiveness of an intervention in authentic educational settings while maintaining the existing classroom structure. The research design is presented as follows:

Table 1 Research design

Groups	Pretest	Treatment	Posttest
Experimental Group	O ₁	X	O ₂
Control Group	O ₃	-	O ₄

Description:

O₁ = Pretest on the experimental group

O₂ = Posttest in the experimental group

O₃ = Pretest on the control group

O₄ = Posttest in the control group

X = AI-assisted writing learning *chatbot* using ChatGPT

The effect of the intervention was determined by comparing students' anecdotal text writing ability between the experimental group and the control group after controlling for students' initial writing ability. This research was conducted at SMK Negeri 1 Percut Sei Tuan, Deli Serdang Regency, North Sumatra Province, during the 2025/2026 academic year. The population of this study consisted of all grade X students at SMK Negeri 1 Percut Sei Tuan from various expertise programs, with a total population of approximately 750 students distributed into 25 classes. The sample was selected using cluster random sampling, in which intact classroom groups were randomly selected as research samples (Subhaktiyasa, 2024). Two classes from the Electrical Power Network Engineering (TJTL) expertise program were selected. Class X TJTL 1 consisted of 30 students and was assigned as the experimental group, while class X TJTL 3 consisted of 25 students and was assigned as the control group. The experimental group received anecdotal text writing instruction assisted by ChatGPT, while the control group received conventional writing instruction without the use of AI Chatbot technology (Hamzah et al., 2026). The research was conducted in three stages: pre-intervention stage, intervention stage, and post-intervention stage.

Pre-intervention Stage

Before the intervention, both groups were given a pretest in the form of an anecdotal text writing task. Students were instructed to write an anecdotal text based on a predetermined

theme. The pretest was conducted to identify students' initial writing ability and ensure the baseline condition of both groups before treatment.

Intervention Stage

The intervention was conducted for four learning meetings, with each meeting lasting 2×45 minutes. The experimental group received anecdotal text writing instruction assisted by ChatGPT, while the control group followed conventional learning activities.

The learning procedure in the experimental group consisted of several activities Idea generation stage Students used ChatGPT to explore possible topics, social phenomena, and humorous situations that could be developed into anecdotal texts. Text organization stage Students used ChatGPT as a supporting tool to identify and organize the structure of anecdotal texts, including abstraction, orientation, crisis, reaction, and coda. Writing development stage. Students developed their own anecdotal texts based on selected ideas. ChatGPT was used to provide suggestions related to paragraph development, language accuracy, and text coherence. Revision and evaluation stage. Students reviewed feedback from ChatGPT and revised their texts critically. Students were instructed not to copy AI-generated responses directly but to evaluate, modify, and develop the suggestions according to their creativity and understanding. Meanwhile, the control group learned anecdotal text writing through conventional methods, including teacher explanations, textbook references, writing exercises, and classroom discussions without AI Chatbot assistance.

Post-intervention Stage

After completing the intervention, both groups were administered a posttest using the same writing task format as the pretest. Students' anecdotal texts were assessed using an analytical writing rubric covering text structure, content and social criticism, language use, and writing organization.

Research Instruments

The research instrument was an anecdotal text writing ability test. Students were required to write an anecdotal text based on a predetermined topic. Students' writing performance was assessed using an analytical rubric consisting of four assessment aspects:

Table 2 Assessment rubric

Assessment Aspects	Indicator	Score
Text Structure	Structural completeness of abstraction, orientation, crisis, reaction, and coda	1-4
Content and Social Criticism	Creativity, relevance of content, and sharpness of social criticism message	1-4
Language Use	Grammatical accuracy, vocabulary, and linguistic rules	1-4
Writing Organization	Coherence and clarity of idea delivery	1-4

The maximum score obtained is **16 points**, then converted to a scale value of 100 using the formula

$$Nilai = \frac{Skor\ yang\ diperoleh}{Skor\ Maksimal} \times 100$$

Data analysis was conducted using IBM SPSS Statistics. The analysis consisted of descriptive and inferential statistical analysis.

Descriptive Statistical Analysis

Descriptive statistics were used to describe students' anecdotal text writing ability before and after treatment. The analysis included mean score, standard deviation, minimum score, and maximum score (Machali, 2021).

Normality Test

The normality test was conducted using the Shapiro-Wilk test to determine whether the

data followed a normal distribution. Data were considered normally distributed if the significance value (p) > 0.05 .

Homogeneity Test

The homogeneity test was conducted using Levene's Test to examine the equality of variance between the experimental and control groups. Data were considered homogeneous if the significance value (p) > 0.05 .

Hypothesis Testing

The hypothesis was tested using **Analysis of Covariance (ANCOVA)**. ANCOVA was selected because it allows comparison of posttest scores between the experimental and control groups while controlling for differences in students' initial ability based on pretest scores. The hypotheses were formulated as follows:

H₀: AI Chatbot-assisted learning does not significantly affect students' anecdotal text writing ability.

H₁: AI Chatbot-assisted learning significantly affects students' anecdotal text writing ability.

The significance level was set at $\alpha = 0.05$. If the ANCOVA result showed $p < 0.05$, H_0 was rejected and H_1 was accepted, indicating that AI Chatbot-assisted learning had a significant effect on students' anecdotal text writing ability.

Results and Discussion

Results

Descriptive Statistics

The descriptive statistics were used to describe students' anecdotal text writing ability before and after the implementation of AI Chatbot-assisted learning. The descriptive results for both experimental and control groups are presented in Table 3.

Table 3. Descriptive Statistics of Students' Anecdotal Text Writing Ability

Group	Test	N	Minimum	Maximum	Mean	Std. Deviation
Experimental Group	Pretest	30	25.00	75.00	48.33	13.43
Experimental Group	Posttest	30	37.50	87.50	67.29	12.99
Control Group	Pretest	25	25.00	62.50	42.75	11.23
Control Group	Posttest	25	43.75	75.00	60.00	9.02

Based on Table 3, both groups showed improvement in anecdotal text writing ability after the learning process. The experimental group showed an increase in the mean score from 48.33 in the pretest to 67.29 in the posttest, with a mean improvement of 18.96 points. Meanwhile, the control group increased from 42.75 in the pretest to 60.00 in the posttest, with a mean improvement of 17.25 points. Although both groups experienced improvement, the experimental group obtained a higher posttest mean score compared with the control group. The difference in posttest mean scores between the experimental group and control group was 7.29 points, indicating that students who received AI Chatbot-assisted learning achieved better writing performance.

Normality Test

The normality test was carried out to see that the sample data came from a normally distributed population. In this study, the Shapiro-Wik normality test was used.

Table 4. Normality Test Results

Kolmogorov-Smirnova			Shapiro-Wilk		
Statistic	Df	Sig.	Statistic	Df	Sig.

Control Pretest	.141	25	.200*	.934	25	.106
Posttest Control	.154	25	.129	.939	25	.142
Pretest Experiment	.134	30	.182	.957	30	.254
Posttest Experiment	.145	30	.110	.959	30	.300

The results in Table 4 show that all significance values were greater than 0.05 ($p > 0.05$). Therefore, the pretest and posttest data from both groups were normally distributed and met the assumption required for further statistical analysis.

Homogeneity Test

The homogeneity test was conducted using Levene's Test to examine whether the variance between the experimental and control groups was homogeneous.

Table 5. Homogeneity Test Results

Living Statistic	df1	df2	Sig.
2.896	1	53	.095

Based on Table 5, the significance value was 0.095 ($p > 0.05$). Therefore, the variance of the experimental and control groups was considered homogeneous.

Hypothesis Test

The hypothesis test was conducted using the Independent Samples t-Test to determine whether there was a significant difference in students' anecdotal text writing ability between the experimental group and the control group after the learning intervention. The results of the Independent Samples t-Test are presented in Table 6.

Table 6. Independent Samples t-Test Results

		Levene's Test for Equality of Variance s		t-test for Equality of Means						
Val ue	Equal variance s assume d	F	Sig. .	T	Df	Sig. (2- Tail ed)	Mean Differe nce	Std. Error Differe nce	95% Confidence Interval of the Difference	
									Lower	Upper
	Equal variance s assume d	2.896	.095	-2.368	53	.022	-729.167	307.869	-1346.674	-111.659
	Equal variance s not assume d			-2.446	51.449	.018	-729.167	298.062	-1327.424	-130.909

Based on Table 6, the Independent Samples t-Test obtained a significance value of 0.022 ($p < 0.05$). Therefore, H_0 was rejected and H_1 was accepted, indicating that there was a significant difference in anecdotal text writing ability between students who learned using

AI Chatbot-assisted instruction and students who learned through conventional instruction. The experimental group achieved a higher posttest mean score ($M = 67.29$) compared with the control group ($M = 60.00$). These findings indicate that AI Chatbot-assisted learning contributed positively to improving students' anecdotal text writing ability.

Effect Size Analysis

To determine the practical magnitude of the intervention effect, Cohen's d effect size was calculated based on the posttest scores of both groups. The calculation resulted in:

$$\text{Cohen's } d = 0.64$$

According to Cohen's criteria, this value represents a **moderate effect size**. This finding indicates that the use of AI Chatbot-assisted learning not only produced statistically significant differences but also provided a meaningful practical improvement in students' anecdotal text writing ability.

Discussion

The Effect of the Use of AI Chatbots on the Ability to Write Anecdotal Texts for Class X Students of SMK Negeri 1 Percut Sei Tuan for the 2025/2026 Academic Year

The findings of this study indicate that students who participated in AI Chatbot-assisted learning demonstrated higher posttest writing scores compared with students who received conventional writing instruction. The experimental group improved from a mean score of 48.33 in the pretest to 67.29 in the posttest, while the control group increased from 42.75 to 60.00. Statistical analysis using the Independent Samples t-Test showed a significant difference between the two groups ($p = 0.022 < 0.05$). These findings suggest that AI Chatbot-assisted learning was associated with improved anecdotal text writing performance among grade X students of SMK Negeri 1 Percut Sei Tuan. However, the interpretation of these findings should not be limited only to statistical significance. The improvement observed in the experimental group may be explained by the role of ChatGPT as a writing support tool that provides assistance throughout different stages of the writing process. Rather than replacing students' writing activities, AI Chatbot functions as a learning assistant that supports students in generating ideas, organizing information, revising texts, and improving language accuracy.

The improvement can be observed particularly in several aspects required in anecdotal text writing. First, AI Chatbot may contribute to content development and idea generation. One of the main difficulties faced by students in writing activities is finding relevant ideas and developing meaningful topics. Through interaction with ChatGPT, students can explore various social phenomena, humorous situations, and possible story ideas that can be transformed into anecdotal texts. This support allows students to produce writing content that is more relevant and creative while still requiring students to evaluate and modify the generated suggestions based on their own understanding. Second, AI Chatbot may support students in understanding and applying anecdotal text structures. Anecdotal texts require specific organizational components, including abstraction, orientation, crisis, reaction, and coda. Students often experience difficulties in arranging these elements coherently. ChatGPT can provide examples and explanations of text structures, allowing students to recognize the function of each component and apply the structure more systematically in their own writing. As a result, students may produce texts with clearer organization and stronger relationships between parts of the story. Third, AI Chatbot may improve language use and linguistic accuracy. Writing anecdotal texts requires students to apply appropriate vocabulary, sentence structures, and linguistic features. Through feedback provided by ChatGPT, students can identify grammatical errors, improve word

choices, and revise unclear expressions.

This process supports students in developing awareness of language use rather than simply producing a final text. These findings are consistent with previous research (Bin-Hady et al., 2023) reported that AI-based language learning tools can support students in developing ideas, increasing engagement, and providing immediate assistance during writing activities. Similarly (Kasneci et al., 2023) explained that Large Language Models such as ChatGPT have educational potential because they can provide explanations, generate examples, and offer feedback that supports individual learning processes. (Warschauer et al., 2023) so suggested that AI-assisted writing tools can support writing development through idea generation, structural improvement, and feedback mechanisms. The findings also support the perspective of (Tlili et al., 2023) who emphasized that the effectiveness of educational chatbots depends on how technology is integrated into learning activities. In this study, ChatGPT was not positioned as a replacement for students' writing abilities but as a supporting tool that facilitated students' cognitive processes during writing. Understanding these structures allows students to produce more organized writing and have better interconnectedness between sections. The results of this study also strengthen the research (Howard et al., 2022) who found that generative AI technology can help students improve their academic abilities through personalized learning support and providing quick feedback. In writing learning, AI's ability to respond to individual student needs is one of the factors that can help overcome differences in initial abilities between students.

Students were encouraged to evaluate AI-generated suggestions, select relevant information, and develop their own ideas. This approach is important because excessive dependence on AI-generated content may reduce students' creativity and critical thinking ability. Although the control group also experienced improvement after conventional instruction, the increase was lower than that of the experimental group. Conventional learning remains valuable because teacher explanations, discussions, and writing exercises provide essential guidance. However, compared with conventional instruction, AI Chatbot-assisted learning provides additional opportunities for individualized assistance and immediate feedback, which may help students overcome difficulties during the writing process. Nevertheless, the findings should be interpreted considering the initial differences between groups. The experimental group had a higher pretest mean score (48.33) compared with the control group (42.75), indicating that the groups were not completely identical in their initial writing ability. Therefore, the observed differences in posttest performance should be interpreted carefully, as baseline variations may have contributed to the final outcomes. Future research may consider using statistical procedures such as ANCOVA to control initial differences between groups and provide stronger evidence regarding the contribution of AI Chatbot-assisted learning.

Conclusion

Based on the findings of this quasi-experimental study, it can be concluded that AI Chatbot-assisted learning was associated with improved anecdotal text writing performance among grade X students of SMK Negeri 1 Percut Sei Tuan during the 2025/2026 academic year. The experimental group showed an increase in the mean writing score from 48.33 in the pretest to 67.29 in the posttest, while the control group increased from 42.75 to 60.00 after receiving conventional instruction. The Independent Samples t-Test results indicated a significant difference in posttest writing performance between the experimental and control groups ($p = 0.022 < 0.05$), with the experimental group achieving a higher mean score. These findings suggest that AI Chatbot-assisted learning can serve as a supportive instructional medium in anecdotal text writing activities by helping students

generate ideas, organize text structures, and receive feedback during the writing process. For Indonesian language teachers, AI Chatbots can be integrated as a complementary tool in writing instruction, particularly during the planning, drafting, and revision stages, while maintaining teacher guidance to encourage students' creativity and independent thinking. However, this study was limited to a single vocational school with a relatively small sample size, and the use of AI requires careful supervision to prevent students from becoming dependent on AI-generated content. Future research involving broader samples and controlled statistical procedures is recommended to further examine the effectiveness of AI-assisted writing instruction.

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