

Senior High Students' Perceptions of Using AI Tools to Improve English Writing: A Quantitative Analysis

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Abstract

AI writing tools such as ChatGPT and Grammarly are increasingly embedded in EFL instruction, yet research on student perception has concentrated on university learners, leaving secondary-level students largely unexamined. This study investigated senior high school students' perceptions of AI-assisted English writing across eight dimensions (perceived usefulness, ease of use, writing confidence, ethical awareness, frequency of use, stages of writing, purpose of use, and self-regulated writing) and tested whether perceptions differed by gender. Using a quantitative descriptive design, data were collected from 45 eleventh-grade students at a senior high school in Malang, Indonesia, via a validated 19-item questionnaire, analyzed through descriptive statistics and independent-samples t-tests. Students reported an altogether positive perception of AI-assisted writing. Ethical awareness scored highest while frequency of use scored lowest and fell in the neutral range, revealing a gap between favorable attitudes and actual practice. No statistically significant gender differences emerged on any dimension. AI writing tools thus appear broadly and equally accepted across gender at the secondary level, but positive attitudes do not automatically translate into regular use. Teachers are encouraged to scaffold both the ethical and practical dimensions of AI-assisted writing instruction to close this gap.

Keywords: Senior high school students, Artificial Intelligence, AI-assisted writing, English writing, students' perceptions, quantitative research.

INTRODUCTION

Artificial intelligence (AI) represents significant technological advancement and is increasingly utilized for human cognitive tasks such as learning, problem-solving, and condition identification (Sapan & Uzun, 2024). With high efficiency and accuracy, AI tools—including Grammarly, Wordtune, QuillBot, and ChatGPT—have been widely adopted in educational contexts (Saini et al., 2025). Digital education surveys indicate that up to 86% of students globally utilize AI tools for study purposes, a trend accelerated following the COVID-19 pandemic. In English language learning, writing constitutes a key component that enables learners to articulate ideas, share experiences, and construct arguments (Amyatun & Kholis, 2023). However, foreign language learners frequently encounter challenges in writing, particularly regarding linguistic knowledge, vocabulary, and grammar (Bulqiyah et al., 2021). AI-assisted writing tools offer immediate feedback, grammar correction, and structural organization, functioning as automated written corrective feedback mechanisms (Aruna & Sarosa, 2025; Song & Song, 2023; Werdiningsih et al., 2024). These tools promote cognitive flexibility and independent learning, enabling students to self-correct without immediate teacher intervention (Marzuki et al., 2023; Nguyen, 2023). Understanding student perceptions is vital, as perception shapes technology acceptance, engagement, and self-regulated learning behaviors (Aruna & Sarosa, 2025; Elshaer et al., 2024). Previous studies emphasize that technology acceptance relies heavily on perceived usefulness and ease of use (Sun & Zhou, 2025).

While research on AI writing tools has expanded, existing studies have primarily focused on university students using qualitative or experimental designs. Empirical data regarding senior high school students, particularly in the Indonesian EFL context, remain limited. Furthermore, whether gender influences high school students' perceptions of AI tools in writing requires empirical evaluation, as prior literature presents mixed evidence regarding gender differences in technology adoption (Al-Raimi et al., 2024; Cachero et al., 2025; Elshaer et al., 2024). To address these research gaps, this study examines senior high school students' perceptions of AI-assisted writing across eight dimensions and investigates gender-based variations.

To guide this investigation, the following research questions were addressed:

1. What are senior high school students' perceptions of using AI tools to enhance their English writing skills?
2. To what extent do male and female students differ in their perceptions of using AI tools for English writing?

METHOD

This study employed a descriptive and comparative quantitative research design (Creswell & Creswell, 2018). The population consisted of eleventh-grade students at a senior high school in Malang, East Java, Indonesia, during the 2025/2026 academic year. A convenience sampling technique was utilized based on accessibility and confirmed prior experience with AI writing tools. A total of 45 completed questionnaires were gathered (23 males and 22 females).

Data collection was conducted using a 19-item structured questionnaire adapted from established scales (Polakova & Ivenz, 2024; Song & Song, 2023; Taufik et al., 2025; Wang et al., 2025; Werdiningsih et al., 2024). The instrument evaluated eight dimensions: Perceived Usefulness (4 items), Ease of Use (2 items), Writing Confidence (2 items), Ethical Awareness (2 items), Frequency of Use (1 item), Stages of Writing (1 item), Purpose of Use (4 items), and Self-Regulated Writing (3 items). Responses were scored on a 5-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). Mean scores were categorized into Negative (1.00–2.33), Neutral (2.34–3.66), and Positive (3.67–5.00) levels based on interval calculations (Sugiyono, 2013). The questionnaire content was validated by expert reviewers, and internal consistency reliability yielded a Cronbach's alpha of 0.937. Data were analyzed using SPSS 27 for descriptive statistics (mean, standard deviation) and independent-samples t-tests.

Table 1. Validity test result

Cronbach's Alpha	N of items
.937	19

FINDINGS

1. Senior High School Students' Perceptions of AI Tools

Descriptive statistical analysis revealed that senior high school students held an overall positive perception of using AI tools to improve English writing skills (Overall M = 3.78, SD = 0.65). Table 2 outlines the mean scores, standard deviations, and perception levels across all eight dimensions.

Table 2. Student perception mean

Dimension	Mean	SD	Interpretation
Ethical Awareness	4.03	0.76	Positive

Dimension	Mean	SD	Interpretation
Perceived Usefulness	3.90	0.79	Positive
Purpose of Use	3.85	0.68	Positive
Stages of Writing	3.82	0.87	Positive
Self-Regulated Writing	3.82	0.80	Positive
Ease of Use	3.80	0.95	Positive
Writing Confidence	3.74	0.69	Positive
Frequency of Use	3.32	1.03	Neutral
Overall Perception	3.78	0.65	Positive

Ethical Awareness recorded the highest mean score ($M = 4.03$, $SD = 0.76$), indicating that students were highly conscious of academic integrity and responsible technology adoption. Perceived Usefulness ($M = 3.90$, $SD = 0.79$), Purpose of Use ($M = 3.85$, $SD = 0.68$), Stages of Writing ($M = 3.82$, $SD = 0.87$), Self-Regulated Writing ($M = 3.82$, $SD = 0.80$), Ease of Use ($M = 3.80$, $SD = 0.95$), and Writing Confidence ($M = 3.74$, $SD = 0.69$) all fell into the positive perception category. In contrast, Frequency of Use recorded the lowest mean score ($M = 3.32$, $SD = 1.03$), placing it in the neutral category.

2. Gender-Based Comparison of Student Perceptions

To address the second research question, an independent-samples t-test was conducted to examine potential differences between male ($n = 23$) and female ($n = 22$) students. Table 3 presents the group descriptive statistics and t-test results.

Table 3. Independent Samples t-test Results by Gender

Dimension	Male (M)	Female (M)	t-value	p-value	Interpretation
Perceived Usefulness	3.89	3.93	-0.152	.880	Not Significant
Ease of Use	4.00	3.47	1.854	.071	Not Significant
Writing Confidence	3.74	3.73	0.025	.980	Not Significant
Ethical Awareness	3.87	4.30	-1.857	.070	Not Significant
Frequency of Use	3.56	2.94	1.994	.053	Not Significant
Stages of Writing	3.96	3.89	1.407	.167	Not Significant
Purpose of Use	3.93	3.74	1.019	.314	Not Significant
Self-Regulated Writing	3.86	3.74	0.477	.636	Not Significant
Overall Perception	3.85	3.67	0.861	.394	Not Significant

Male students obtained a slightly higher overall mean score ($M = 3.85$, $SD = 0.64$) than female students ($M = 3.67$, $SD = 0.67$), but the difference was not statistically significant ($t(42) = 0.861$, $p = .394$). Across all individual dimensions, p-values remained above the threshold of .05, confirming that male and female students shared equivalent perceptions regarding AI writing tools.

DISCUSSION

The findings demonstrate that senior high school students hold positive perceptions of AI tools in English writing instruction. Students recognized AI tools as valuable instruments for generating ideas, correcting grammar, refining vocabulary, and revising drafts. These findings align with Kaharuddin et al. (2024) and Song and Song (2023), who observed that AI integration supports language acquisition and enhances writing performance.

Notably, Ethical Awareness emerged as the highest-rated dimension ($M = 4.03$), reflecting students' recognition that AI should act as a supportive learning scaffold rather than an unethical shortcut. This aligns with Nguyen (2023) and Wang et al. (2025), emphasizing the importance of ethical reflection in technology adoption. Conversely, Frequency of Use recorded the lowest mean score ($M = 3.32$), indicating a gap between students' positive attitudes and their actual frequency of use. As Sapan and Uzun (2024) noted, favorable perceptions do not automatically lead to daily usage, often due to teacher monitoring, institutional policies, or selective task-based reliance.

Regarding gender, the independent-samples t-test indicated no statistically significant differences between male and female students across all measured dimensions. This finding aligns with Al-Raimi et al. (2024), demonstrating that AI tools offer broadly accessible learning support regardless of gender. While some international studies report gender differences in perspective (Cachero et al., 2025; Elshaer et al., 2024), the secondary EFL context in Indonesia demonstrates gender parity in student acceptance and ethical awareness.

CONCLUSION

This study investigated senior high school students' perceptions of AI tools in English writing and evaluated gender differences across eight perception dimensions. The results show that high school students generally maintain positive perceptions toward AI tools. While ethical awareness is exceptionally high, daily usage remains moderate. Furthermore, perception levels do not differ significantly by gender, indicating equal acceptance across male and female learners.

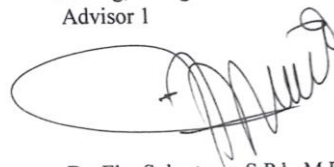
Pedagogically, English teachers are encouraged to integrate AI tools as complementary learning aids while providing explicit guidance on ethical use and self-regulated revision. Schools should establish clear digital literacy frameworks to assist teachers and students. The future researcher recommended to add the most use AI data across all students and class. Also investigated more the difference use of AI in stages of writing and ethical awareness on senior high level. Future research also should expand the participant sample across multiple schools and explore additional variables such as language proficiency, digital literacy, and actual writing performance outcomes.

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Malang, 07 Agustus 2026
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