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# Correlates of AI Usage and Writing Habits on Senior High School Students' Writing Proficiency

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***Abstract***
**Aim:** This study examined the relationship between AI usage, writing habits, and writing proficiency among 228 Grade 12 students in public high schools in the pprovince of Bukidnon, Philippines.
**Methodology:** A descriptive-correlational design utilizing canonical correlation analysis was employed to analyze data collected from students using questionnaires assessing AI usage and writing habits, alongside a writing proficiency rubric. The study was grounded in theories such as Social Constructivism, Output Hypothesis, Process Writing Theory, and Cognitive Load Theory.
**Results:** Students reported moderate levels of artificial intelligence usage, while demonstrating high levels of established writing habits. Overall writing proficiency across the sample was moderate. Statistical analysis revealed that writing habits were significantly associated with writing proficiency scores; however, no significant relationship was found between AI usage and writing proficiency outcomes.
**Conclusion:** Regular, well-structured writing routines have a stronger impact on writing skills than reliance on AI tools, especially in environments with limited digital infrastructure. Emphasizing foundational writing instruction and contextualized digital tool integration is recommended.
***Keywords***: *artificial intelligence, writing habits, writing proficiency, automated writing tools, educational technology*

## INTRODUCTION

Writing proficiency remains a critical determinant of academic and professional success in the Philippines' technology-driven educational landscape (Graham et al., 2020). As digital tools transform learning environments, the ability to communicate effectively through writing continues to be fundamental across all subjects and career paths, particularly for students at crucial transitional stages.

Recent studies by Reyes and Belecina (2021) reveal alarming deficiencies in writing skills among Filipino senior high school students. These findings highlight a pressing concern for Grade 12 students who stand at the threshold of higher education or employment, where strong writing abilities can significantly impact their future prospects and opportunities.

While substantial research examines technology's influence on writing development in various contexts (Yancey, 2019), a significant gap exists in understanding how artificial intelligence (AI) impacts writing proficiency specifically among Grade 12 Filipino students (Abednia & Izadinia, 2021). This gap is particularly concerning given the rapid integration of AI tools in educational settings worldwide, leaving educators in the Philippines with limited evidence-based guidance for implementation.

Evidence suggests that AI and online platforms can enhance writing through personalized feedback and collaborative experiences (Huang et al., 2023; Dong, 2023; Fitria, 2023; Al-Shammari & Al-Khalifa, 2024). Simultaneously, research indicates that writing habits—including practice frequency (Graham & Harris, 2019) and prewriting strategies (Alemu, 2020)—significantly influence skill development. However, limited research explores how these factors interact specifically among Filipino students facing unique cultural and educational challenges (Graham, 2018; Fabro et al., 2024).

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This study examines the relationship between AI usage, writing habits, and writing proficiency among Grade 12 students in the Philippines, addressing a critical research gap with significant implications for educational practice. Understanding these relationships is essential for developing effective pedagogical approaches that leverage technology to enhance writing instruction (Zheng & Warschauer, 2019), preparing Filipino students for environments where strong writing skills are indispensable (Bowman & Akcaoglu, 2019).

The findings will provide actionable insights for educators and policymakers to address persistent writing proficiency concerns in the Philippine education system (Reyes & Belecina, 2021). By investigating the complex interplay between technology use and writing development, this research contributes to the broader goal of supporting the United Nations Sustainable Development Goal 4 for quality education (United Nations, 2015), offering evidence-based strategies to improve writing instruction in increasingly digital learning environments.

**Review of Related Literature and Studies**

Writing proficiency encompasses five essential dimensions—content (substance and depth of ideas), grammar (sentence structure rules), vocabulary (word range and precision), mechanics (punctuation and formatting conventions), and organization (logical flow of ideas)—all crucial for effective academic communication. Recent literature reveals both advantages and challenges of digital tools in developing these skills: studies by Graham et al. (2022), Seo et al. (2021), and Lee and Kim (2020) highlight how digital platforms facilitate richer text interactions and provide immediate feedback, while Cheng and Wu (2021) found increased student motivation when using digital writing platforms. Research by Nguyen and Nguyen (2021), Liu and Chen (2022), and Wang and Lee (2020) demonstrates the effectiveness of structured approaches like mind mapping and peer feedback for improving content development and organization. Despite these benefits, researchers including Newton (2019), Kim and Park (2019), and Cheng and Liu (2020) caution against potential drawbacks, such as the integration of informal digital communication styles in academic writing, overreliance on technology potentially hindering critical thinking skills, and the importance of balancing digital tools with traditional instruction to ensure students develop strong writing fundamentals before incorporating technological enhancements.

AI applications in education show significant promise for enhancing writing skills. Research demonstrates that Automated Writing Evaluation tools (like Grammarly), Automated Writing Corrective Feedback tools, AI-powered machine translators, and text generators (such as ChatGPT) provide personalized learning experiences with immediate feedback on grammar, style, and content organization, particularly benefiting EFL students (Kurniati & Fithriani, 2023; Liu et al., 2023). Studies by Huang and Tan (2023) confirm these tools improve grammatical accuracy and overall writing quality, while text generators help overcome creative blocks and generate diverse content ideas (Otero, 2024). Despite these benefits, researchers like Luxton (2020) and Cheng and Liu (2020) caution against overreliance on AI tools, which may hinder critical thinking development and originality. The responsible integration of AI writing tools with traditional instruction creates an optimal balance that enhances students' writing proficiency while maintaining academic integrity and independent thinking skills.

Research demonstrates that both frequency and consistency in writing practice are fundamental to improving proficiency, with regular engagement associated with better performance, higher motivation, and reduced anxiety (Graham et al., 2018; Vrika, 2023; Dizon & Sanchez, 2020; Muńoz & Sanchez, 2023). Structured writing processes—encompassing planning, drafting, and revising—significantly enhance writing outcomes (Foster et al., 2021). Effective planning strategies improve coherence and organization (Ekholm et al., 2021), while unhindered drafting fosters creativity (Sullivan, 2023), and thorough revision with peer feedback refines quality (McCutchen et al., 2018; Vrika, 2023). Consistent writing routines contribute to higher academic achievement by promoting discipline, improving time management, increasing productivity, and reducing deadline-related anxiety (Clark et al., 2019; Sullivan, 2023). This disciplined approach helps writers overcome procrastination and writer's block while developing a diverse skill set through exploration of different styles and genres (Alves & Limpo, 2020; Wallace et al., 2022), ultimately fostering positive writing attitudes and viewing writing as manageable and enjoyable.

**Theoretical Framework**

This study argues that AI usage and writing habits significantly affect Grade 12 students' writing proficiency, grounded in Social Constructivism Theory (Vygotsky, 1978), which emphasizes learning as a social activity mediated through interactions, now often occurring via digital platforms (Mbati, 2023; Freeman, 2020; Schell & Janicki, 2020). AI writing tools align with social constructivist principles by providing personalized support through automated evaluation systems and corrective feedback (Huang et al., 2023; Zawacki-Richter et al., 2019), while machine translators and text generators enhance linguistic abilities and creativity (Yang, 2024; Crossley et al., 2019). The

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research is further supported by Swain's Output Hypothesis (1985, 1995), which posits that language production is essential for development, with AI tools facilitating the noticing, hypothesis-testing, and metalinguistic functions by providing immediate feedback that prompts error recognition and language rule reflection (García & Santos, 2022). Additionally, Process Writing Theory (Flower & Hayes, 1981) highlights writing's recursive nature through planning, drafting, and revising, while Cognitive Load Theory (Sweller, 1988) suggests AI tools optimize learning by reducing cognitive load through automating lower-order tasks, allowing students to focus on developing higher-order writing skills such as idea development and coherence.

**Objectives**

This study intended to determine the relationship between AI usage and writing habits with the writing proficiency of Grade 12 students.

The research sought to answer the following research questions:

1. What is the extent of AI usage of the participants ?
2. What are the writing habits of the participants?
3. What is the writing proficiency level of the participants?
4. Do the participants' AI usage and writing habits significantly influence their writing proficiency?

**Hypothesis**

Given the stated research problems, the following hypotheses were tested at 0.05 level of significance:

$H_{o1}$: There is no significant relationship between the extent of AI usage and the overall writing proficiency of Grade 12 students.

$H_{a1}$: There is a significant relationship between the extent of AI usage and the overall writing proficiency of Grade 12 students.

$H_{o2}$: There is no significant relationship between writing habits and the overall writing proficiency of Grade 12 students.

$H_{a2}$: There is a significant relationship between writing habits and the overall writing proficiency of Grade 12 students.

## METHODS

**Research Design**

The research design used in this study was descriptive-correlational to investigate the correlates of AI usage and writing habits on Grade 12 students' writing proficiency in selected high schools in Bukidnon Division.

**Population and Sampling**

This study was carried out in two high schools located in the southwestern part of Bukidnon Division, involving a total of 228 participants. The respondents were selected through proportional stratified random sampling based on the specific criterion that they are Grade 12 students using AI in their writing.

**Instrument**

Three researcher-developed instruments were used in this study. The AI Usage Questionnaire measured the frequency and types of artificial intelligence tools used in students' writing, including automated evaluators, grammar checkers, text generators, and translation software, using a 10-item, 5-point Likert scale. The Writing Habits Questionnaire assessed the frequency of practice, consistency of routines, and approaches to the writing process, also using at least a 10-item, 5-point Likert scale. The Writing Proficiency Rubric evaluated content, grammar, vocabulary, mechanics, and organization, each on a 4-point scale with detailed descriptors. Content validity for all instruments was established by a panel of four English language educators and educational researchers. Pilot testing involved thirty Grade 11 students for the questionnaires and five students for the writing proficiency rubric. The rubric's inter-rater reliability was assessed by having essays independently scored by the researcher and two English teachers.

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**Data Collection**

Data collection was conducted during the fourth quarter of the school year 2024-2025. The survey questionnaire was administered in a paper-and-pencil format within the participants' regular classrooms to maintain a familiar and comfortable environment. Each data collection session lasted approximately 45-60 minutes, with participants given adequate time to complete the questionnaire without time pressure. The researchers were present during the administration to provide clarification on any questions and ensure proper completion procedures. To maintain consistency across all participating schools, standardized instructions were read aloud to each group before questionnaire distribution. Upon completion, questionnaires were immediately collected and stored securely to prevent data loss or contamination. Data collection sessions were scheduled during non-examination periods to minimize disruption to students' academic activities and ensure focused participation. The entire data collection process achieved an 80 percent response rate across all participating schools and was completed within the planned timeframe.

**Treatment of Data**

The gathered data were subjected to quantitative analysis employing appropriate statistical techniques. Descriptive statistics, including frequency, percentage, mean, and standard deviation, were used to describe the extent of participants' AI usage, writing habits, and writing proficiency. Canonical Correlation Analysis (CCA) was employed to investigate the multivariate relationships between two sets of variables: (a) the extent of AI usage (comprising Automated Writing Evaluation Tools, Automated Writing Corrective Feedback Tools, and Text Generators) and writing habits (including frequency of writing practice, consistency in writing routines, and approach to the writing process) and (b) writing proficiency (assessed in terms of content, grammar, vocabulary, mechanics, and organization).

**Ethical Considerations**

Throughout the study, the researchers adhered to strict ethical standards by securing informed consent from all participants and safeguarding the confidentiality and privacy of their data.

**RESULTS and DISCUSSION**

This section presents and interprets the findings of the study based on the following research questions: the extent of AI usage among the participants, their writing habits, their writing proficiency levels, and whether AI usage and writing habits significantly correlate with writing proficiency.

**Participants' Extent of AI Usage**

The table below presents the extent of AI usage of the participants in terms of automated writing evaluation tools, automated writing corrective feedback tools and text generators.

Table 1. Summary Table of the Extent of AI Usage of the Participants

| ***Dimensions of AI Usage*** | ***Mean*** | ***Interpretation*** | ***SD*** |
|---|---|---|---|
| *Automated Writing Evaluation Tools* | *3.32* | *Moderate* | *0.56* |
| *Automated Writing Corrective Feedback Tools* | *3.42* | *Moderate* | *0.60* |
| *Text Generators* | *3.40* | *Moderate* | *0.57* |
| ***Overall AI Usage*** | ***3.38*** | ***Moderate*** | ***0.51*** |

Looking at the three dimensions individually, Automated Writing Corrective Feedback Tools received the highest mean score of 3.42 ("Moderate"), followed closely by Text Generators with a mean of 3.40 ("Moderate"), while Automated Writing Evaluation Tools showed the lowest mean at 3.32 ("Moderate"). The small differences between these scores indicate that students use these AI tools with similar frequency, though they appear to favor corrective feedback tools slightly more than the others.

The relatively higher usage of Automated Writing Corrective Feedback Tools (3.42) implies that students place greater value on tools that help them fix specific problems in their writing. This finding demonstrates that students prioritize error correction and grammar improvement over other aspects of writing assistance. The slightly lower score for Automated Writing Evaluation Tools (3.32) may reflect the more complex nature of these

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applications, which often require more sophisticated understanding of writing assessment processes. This finding indicates that while students appreciate feedback on grammatical errors, they may be less comfortable with or aware of tools that evaluate broader aspects of writing quality such as coherence and organization.

As a whole, the overall "Moderate" extent of AI usage across all three dimensions demonstrates that the participants have integrated AI writing technologies into their educational practices to a meaningful degree, while still maintaining balance in their approach to writing. This finding points to an educational environment where students are gradually embracing technological assistance without abandoning traditional writing skills development (Sanchez & Sarmiento, 2020).

**Participants' Writing Habits**

This section shows writing habits of participants in terms of frequency of writing practice, consistency of writing routines and approach to the writing practice (planning, drafting, revising).

Table 2. Summary Table of the Writing Habits of the Participants

| ***Dimensions of Writing Habits*** | ***Mean*** | ***Interpretation*** | ***SD*** |
|---|---|---|---|
| *Frequency of Writing Practice* | *3.69* | *High* | *0.66* |
| *Consistency in Writing Routines* | *3.96* | *High* | *0.73* |
| *Approach to the Writing Process (Planning, Drafting, Revising)* | *3.63* | *High* | *0.73* |
| ***Overall Writing Habits*** | ***3.76*** | ***High*** | ***0.44*** |

Examining the individual dimensions reveals that Consistency in Writing Routines achieved the highest mean score of 3.96 ("High"), followed by Frequency of Writing Practice at 3.69 ("High"), and Approach to the Writing Process at 3.63 ("High"). This pattern indicates that participants excel particularly in maintaining regular writing routines, slightly more than in practicing frequently or following structured writing processes.

The high score for Consistency in Writing Routines (3.96) demonstrates that participants have established disciplined and structured approaches to their writing activities. This finding reflects participants' advanced understanding of how regular, systematic writing practice contributes to skill development. The strong rating for Frequency of Writing Practice (3.69) indicates that participants engage in writing activities with considerable regularity. This dimension underscores the quantity aspect of writing practice, highlighting participants' commitment to frequent engagement with writing tasks.

The slightly lower but still "High" score for Approach to the Writing Process (3.63) reveals that participants generally employ structured approaches to planning, drafting, and revising their writing. While this dimension scored somewhat lower than the others, it still indicates well-developed strategic approaches to writing.

In a nutshell, the overall "High" rating for Writing Habits demonstrates that participants have developed mature and effective approaches to writing across all measured dimensions. This finding reflects an educational environment that successfully promotes strong writing habits, laying a solid foundation for continued development of writing skills.

**Participants' Writing Proficiency Level**

This section shows the writing proficiency level of the participants in terms of content, grammar, vocabulary, mechanics; and organization.

Table 3. Summary Table of Writing Proficiency

| ***Dimensions of Writing Proficiency*** | ***Mean*** | ***Interpretation*** | ***SD*** |
|---|---|---|---|
| *Content* | *3.14* | *Moderate* | *0.61* |
| *Grammar* | *2.86* | *Moderate* | *0.63* |
| *Vocabulary* | *2.93* | *Moderate* | *0.60* |
| *Mechanics* | *2.81* | *Moderate* | *0.61* |
| *Organization* | *2.77* | *Moderate* | *0.71* |
| ***Overall Writing Proficiency*** | ***2.90*** | ***Moderate*** | ***0.56*** |

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Examining the individual dimensions reveals that Content achieved the highest mean score of 3.14 ("Moderate"), followed by Vocabulary at 2.93 ("Moderate"), Grammar at 2.86 ("Moderate"), Mechanics at 2.81 ("Moderate"), and Organization at 2.77 ("Moderate"). This pattern indicates that while all dimensions fall within the moderate range, participants demonstrate relatively stronger abilities in content development compared to the more technical aspects of writing.

The relatively higher score for Content (3.14) suggests that participants demonstrate greater strength in developing ideas and subject matter than in executing technical writing skills. This finding indicates that participants can generate appropriate writing content but may struggle with expressing that content using correct grammar, precise vocabulary, proper mechanics, and clear organization.

The middle-range scores for Vocabulary (2.93) and Grammar (2.86) indicate moderate command of word choice and grammatical structures. This finding shows that participants possess basic vocabulary and grammatical knowledge but may lack the sophisticated lexical resources and grammatical precision needed for advanced writing.

The lower scores for Mechanics (2.81) and Organization (2.77) reveal these areas as particular challenges for participants. This pattern suggests that participants struggle most with the technical aspects of punctuation and spelling, as well as with structuring their writing logically and coherently.

The consistently moderate scores across all dimensions indicate balanced but limited development across the writing proficiency spectrum. This pattern reflects writing development that has progressed beyond basic levels but has not yet reached advanced proficiency in any dimension. The overall "Moderate" rating for Writing Proficiency demonstrates that participants have acquired functional writing skills but require further development across all dimensions to achieve high proficiency.

**Correlation Between Participants' AI Usage and Writing Habits with their Writing Proficiency**

This final section of the chapter presents a canonical correlation analysis examining the relationship between participants' AI usage and writing habits with their writing proficiency.

Table 4. Canonical Correlation Analysis Between the Participants' AI usage and Writing Habits with their Writing Proficiency

| | ***Canonical Loadings*** | | | ***Canonical Correlations*** | | | |
|---|---|---|---|---|---|---|---|
| | | | | $r_c$ | $r_c^2$ | ***F (15,607)*** | ***p*** |
| ***AI Usage*** | | ***Writing Proficiency*** | | | | | |
| *Automated Evaluation Tools* | *.612* | *Content* | *.309* | | | | |
| *Automated Writing Corrective Feedback Tools* | *.255* | *Grammar* | *.464* | *.212* | *.045* | *1.36* | *.161* |
| *Text Generators* | *.774* | *Vocabulary* | *-.065* | | | | |
| | | *Mechanics* | *.068* | | | | |
| | | *Organization* | *.316* | | | | |
| ***Writing Habits*** | | ***Writing Proficiency*** | | | | | |
| *Frequency of Writing Practice* | *-.575* | *Content* | *-.818* | | | | |
| *Consistency in Writing Routines* | *.731* | *Grammar* | *-.911* | *.369* | *.136* | *2.77*** | *.000* |
| *Approach to the Writing Process* | *-.725* | *Vocabulary* | *-.776* | | | | |
| | | *Mechanics* | *-.698* | | | | |
| | | *Organization* | *-.529* | | | | |

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The second canonical variate reveals a statistically significant association between writing habits and writing proficiency ($Rc = .369$, $Rc^2 = .136$, $F(15,607) = 2.77$, $p = .000$), rejecting $Ho_2$ and confirming that writing habits significantly correlate with writing proficiency. Writing habits account for 13.6% of writing proficiency variability—a moderate association. Among writing habits, Consistency in Writing Routines showed strong positive loading (.731), while Frequency of Writing Practice (–.575) and Approach to the Writing Process (–.725) displayed negative loadings, with all five writing proficiency dimensions also showing negative loadings. This pattern indicates students who write less frequently with unstructured strategies tend to have lower proficiency, while the inverse relationship between consistency and proficiency suggests students may perceive routine consistency without actual quality improvement. While AI usage showed non-significant relationship with writing proficiency, highlighting limitations in current practices, the significant relationship between writing habits and proficiency reinforces that behavior and cognitive engagement matter in writing development. These findings emphasize the importance of strengthening students' writing behaviors through structured routines and purposeful feedback while carefully integrating AI tools in classroom settings.

## Conclusions

The research findings partially validate Social Constructivism Theory in educational contexts, revealing that writing habits maintain a moderate relationship with proficiency while AI tools exert minimal influence in upland schools—exposing the digital divide between urban and rural environments. For remote schools, traditional writing instruction approaches remain most effective, with consistent routines strongly connected to improved proficiency, confirming that fundamental practices like regular exercises and systematic revision processes constitute the most reliable pathway to skill development. The limited impact of AI tools stems from implementation challenges rather than theoretical flaws, including inconsistent internet access and insufficient training. Educational practitioners should therefore prioritize strengthening foundational writing habits while gradually incorporating technology as supporting tools, while policymakers must develop context-sensitive approaches to technology integration that recognize the continuing importance of traditional skill-building in areas with developing infrastructure.

## Recommendations

Based on the findings, teachers should prioritize activities building strong writing habits through daily exercises, structured schedules, and systematic revision processes, with explicit instruction in planning, drafting, and revising—particularly targeting organization and mechanics where students showed lowest proficiency—while using AI tools strategically as supplements rather than replacements. School administrators should sustain structured writing programs by ensuring resources and policies prioritize regular practice, enhance writing initiatives through targeted professional development and teacher collaboration, and facilitate appropriate technology integration as supplements without diminishing focus on foundational skills. Future researchers should conduct longitudinal studies examining how writing habits and AI usage evolve as technological access improves in upland areas, investigate effective models for technology integration in resource-limited settings, and develop intervention programs combining traditional writing habit development with appropriate technology integration. Students should strengthen writing routines and practice schedules, focus on developing writing process skills rather than relying primarily on technology, and approach AI tools as learning aids for understanding writing principles rather than shortcuts for generating or correcting text.

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