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The Usage of Artificial Intelligence Writing Tools and Writing Competence of Senior High School Students: A Correlational Study

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Abstract

This study aims to determine the level of artificial intelligence (AI) writing tools usage, assess the level of writing competence, and explore if there is a significant relationship between the usage of AI writing tools and the writing competence of senior high school students. A descriptive correlational research design was employed to gather the needed data. The respective data were collected through online surveys using Google Forms from a sample of 294 grade 12 senior high school students at Davao Doctors College, Inc., who were selected using a simple random sampling technique. The statistical analysis used revealed a statistically significant positive correlation between the utilization of AI writing tools and writing competence ($r = .477$, $p < 0.05$). These findings suggest that integrating AI writing tools into the senior high school curriculum holds educational significance, potentially enhancing students' writing competence. As for recommendations, educators are encouraged to adapt pedagogical approaches that incorporate technology-enhanced methods, and stakeholders should be made aware of the benefits of AI writing tools for improving writing skills in the high school setting. These insights contribute to the ongoing discourse on technology integration in education, providing valuable considerations for educators, administrators, and policymakers seeking to optimize writing instruction in senior high schools.

Keywords: *Artificial Intelligence Writing Tools, Writing Competence, Senior High School Students, Descriptive Correlational Study, Philippines*

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Introduction

In this day and age, artificial intelligence (AI) has become highly prevalent (Abdelli, 2023). One of the areas where AI has made significant strides is education, where students extensively utilize AI tools for their school-related tasks, particularly those related to writing (Ouyang & Jiao, 2021). According to a survey reported by Campus Technology, 86% of students use AI in their studies, with 24% using it daily (Kelly, 2024). In line with this, Yeo (2023) stated that, we should problematize the use of these tools, as these tools allow students to paraphrase, summarize, extend, and even create original texts with minimal original input, raising questions about authorship and academic integrity. In addition, Nazari et al. (2021), states that writing is a crucial macro skill that one must master and improve. As senior high school students are about to enter a higher level of education, it is essential for them to develop writing competence for academic and professional success (Harianti et al., 2023).

Previous studies show that many students in several countries still have low writing competence. A study conducted in Pakistan found that the students possess alarmingly weak and substandard writing skills. These issues generally arise from incompetence in content selection, syntax, topic sentences, idea expansion, coherence, organization, mechanics, inappropriate use of vocabulary, and lack of vocabulary (Erellana, 2021). In line with this, a study conducted at A'Sharqiyah University in Oman found that students struggled with various writing issues, including: Mechanical problems, Linguistic problems, Cognitive challenges, and Psychomotor issues (Elbashir, 2023). On the other hand, Madison et al. (2019) stated that, writing can improve one's overall well-being by facilitating self-expression and fostering connections among individuals via storytelling and empathetic sharing. Regrettably, many students in the United States fail to meet the expected writing proficiency standards at their respective grade levels.

Meanwhile, in the Philippines, concerning results have been found in a lot of studies and articles in the recent years, where it is consistently being revealed that Filipino students are falling behind those from other nations in terms of writing proficiency, particularly in the English language. In an article by Balinbin (2020), statistical data from the Southeast Asia Primary Learning Metrics (SEA-PLM) showed that the writing competencies of Filipino learners are significantly lower than those of Malaysian, Cambodian, and Vietnamese learners. This decrease in standing in terms of writing proficiency in comparison to other Asian countries is directly connected to the lack of effective policies granted towards developing and enhancing Filipino learners' proficiency in writing. Furthermore, the study of Saavedra (2020), revealed the five significant factors that contribute to the poor writing skills of the elementary pupils in Filipino and English. It includes: Lack of Vocabulary, Difficulty in Organizing Ideas, Perception of Writing as Difficult, Lack of Motivation, and Challenges with Language Mechanics. Aside from this, a study by United Nations International Children's Emergency Fund (UNICEF) (2019), titled Southeast Asia Primary Learning Metrics (SEAPLM), revealed that only one percent of Filipino learners have achieved proficiency in writing, which is the ability to write cohesive texts, have detailed ideas, and use an extensive range of appropriate vocabulary.

In Davao de Oro, a significant gap is observed between the expected level of writing competence among senior high school students, particularly in grammar and reading comprehension, as highlighted in the study of Raymunde and Mamonong (2022). These findings emphasize the necessity of exploring comprehensive approaches, potentially involving AI writing tools, to address writing competence issues locally (Raymunde & Mamonong, 2022; Solas & Aperocho, 2023).

AI-powered systems have accumulated significant attention in recent years for their potential to enhance and help develop various aspects of education, particularly in improving the writing skills and competence of students. Researchers such as Balyan *et al.* (2021) and Rijt *et al.* (2020) have delved into the effectiveness of different AI-powered writing systems, highlighting their ability to provide more objective feedback compared to traditional manual methods. According to Yu *et al.* (2022), the advent of AI has given the education sector new opportunities to deal with issues like these. Some studies stated that using AI-powered writing tools can help learners improve and develop their writing competence (Kurniati & Fithriani, 2022; Wang, 2022; Zhao, 2022). However, not all studies have found positive effects of AI writing tools on student writing ability. Krajcik and Kim (2020) found that while students generally found AI writing tools helpful, they did not necessarily improve writing quality. Similarly, according to Huang and Tan (2023), relying too much on

generated text from AI-powered writing systems such as ChatGPT may hinder the development and usage of the students' own writing competence.

With the literature presented on the usage of AI writing tools and the students' writing competence, the researchers acknowledged that conducting a more in-depth investigation of their relationship is imperative. Given the widespread use of AI in education, this study seeks to explore the intricate relationship between AI writing tool utilization and the writing competence of senior high school students. While previous studies have examined the relationship between AI writing tool usage and the writing competence of undergraduate students, they have given limited attention to senior high school students. Therefore, by focusing on senior high school students, this study aims to bridge the gap by examining the relationship between the usage of AI writing tools and the writing competence of senior high school students. The findings of this study may provide the Department of Education officials, school administrators, teachers, parents and guardians, students, and future researchers valuable insights into the potential implications of using AI writing tools for educational practices and curriculum development.

Methods

In this study, the researchers utilized a quantitative research design, specifically a descriptive correlational research design to find the relationship among the variables being studied. This type of research design aims to identify patterns and trends in data and provide a comprehensive description of the relationship between variables and does not establish causation (Siedlecki, 2020). Thus, the approach was appropriate for this study as it aims to investigate the relationship between the usage of artificial intelligence writing tools and the writing competence of senior high school students without manipulating the independent variable.

In addition, the respondents consisted of 294 Grade 12 students from various strands and sections of Davao Doctors College Inc. Senior High School. Given the current educational level these students and considering their upcoming transition to tertiary education, the need to assess their preparedness for future academic pursuits made them fit for the study. The selection was done using Slovin's formula, employing 0.05 for the magin of error.

Moreover, the researchers utilized the simple random sampling technique to select respondents, since this technique is commonly used in quantitative studies with survey questionnaires as it gathers respondents homogeneously and on pure luck, ensuring an unbiased representation of the diverse student body and equal chance for every member of the population to be chosen (Noor *et al*., 2022; Simkus, 2023).

The researchers, assigned across different sections and strands, approached randomly selected Grade 12 students from the institution. Researchers initiated conversations with the students and obtained their willingness to participate in the study prior to administering the survey. Consequently, the survey link was distributed to the selected respondents through their social media accounts, accompanied by an informed consent form highlighting the purpose and procedure of the study, as well as the voluntary nature of participation and clear instructions for respondents, and the ethical considerations of the study.

The researchers ensured the confidentiality of respondents' personal information and data during the study in accordance with the Data Privacy Act of 2012 (Republic Act 10173). Additionally, the researchers strictly controlled data access, ensuring it was accessible only to them. Furthermore, the researchers considered the availability of respondents and designed the instruments without biases based on race, religion, or cultural background. Moreover,

respondents who chose not to participate in the survey were given the option to decline, respecting their right to ensure they would not feel pressured to be part of the study.

For the research instrument, the researchers employed a structured survey questionnaire during the data collection. This instrument underwent validation and garnered 4.52 out of 5 score from the validators. In addition, the said instrument was designed based on the identified variables in the study to comprehensively evaluate both the usage patterns of artificial intelligence (AI) writing tools and the writing competence of senior high school students.

The initial section of the questionnaire assessed the senior high school students' usage of AI writing tools. The evaluation considered perceived usefulness, perceived ease of use, and attitude towards usage. The instrument, comprising 30 items, employed a five-point Likert scale, with respondents rating from 5 (highest score) to 1 (lowest score). The scale's range had corresponding descriptive equivalents for interpretation that was adopted from the study of Manyange *et al.* (2015).

Furthermore, the second section focused on evaluating the writing competence of senior high school students, specifically in terms of vocabulary, sentence structure, and content and organization. Similar to the first section, respondents used a 5-point Likert scale for rating, with 5 as the highest score and 1 as the lowest score. The scale's range also had descriptive equivalents for interpretation. Data interpretation utilized the 5-point Likert scale to determine the level of writing competence.

In line with the study's quantitative and correlational nature, statistical analyses were conducted using mean, standard deviation, and Pearson-r correlation. To ensure the accuracy and validity of the findings, the researchers also sought the expertise of a statistician during the analysis and interpretation of the data.

For transparency, the study acknowledges potential limitations related to response bias, which may arise from the use of a structured survey questionnaire as the sole data collection instrument. As the instrument primarily utilized a Likert scale format, it may have restricted respondents from elaborating on their thoughts or providing context beyond the fixed response options. This limitation may have influenced the depth and nuance of the data, potentially affecting the richness of the findings.

Results and Discussion

Table 1. Level of Usage of Artificial Intelligence Writing Tools among Senior High School Students

Indicators	Mean	Standard Deviation	Descriptive Level
Perceived Usefulness	4.10	0.80	High
Perceived Ease of Use	4.17	0.75	High
Attitude towards Usage	3.63	0.96	High
Overall	3.97	0.84	High

Legend: 5.00 - 4.20 – Very High; 4.19 - 3.40 – High; 3.39 - 2.60 – Moderate; 2.59 - 1.80 – Low; 1.79 - 1.00 – Very Low

As presented in Table 1, the level of usage of artificial intelligence writing tools among senior high school students is described as high, with an overall mean of 3.97 and a standard deviation of 0.84. This means that the students demonstrate a high level of usage of artificial intelligence writing tools. The findings further highlight that the students used AI writing tools to achieve and overcome difficulties in their writing-related tasks. Thus, the high level of usage of artificial intelligence writing tools implies that the senior high school students generally view AI writing tools positively and find them valuable and user-friendly.

This result is aligned with the study of Alharbi (2023), where students are progressively utilizing diverse AI-driven writing assistance tools, encompassing automated writing evaluation tools, platforms delivering automated corrective feedback on writing, machine translators powered by AI, and GPT-3 automatic text generators.

Building upon this, the results above support the study of Abdelli (2023) regarding the positive impact of AI in education. The findings align with Abdelli's assertion that AI has greatly enhanced the overall state of education by increasing effectiveness, efficiency, and accessibility for students of all backgrounds. The discovery that students' positive attitude towards using user-friendly technology leads to improved productivity and content quality echoes the transformative role of AI in educational settings.

Specifically, among the three indicators of usage of artificial intelligence writing tools, perceived ease of use garnered the highest rating. The perceived ease of use indicator included items such as "AI-based writing tools are accessible" and "AI-based writing tools are designed to be user-friendly". With a mean score of 4.17 and a standard deviation of 0.75, the results were described as high. This reveals that the intention of the students to use AI writing tools is likely to happen if they find them easy to use and do not require much effort, thought, and learning time.

This finding substantiates the idea of Sumakul *et al.* (2022), which states that when students find technology, specifically AI writing tools, easy to use, they are more likely to incorporate them into diverse writing tasks. In addition, the study's findings are further supported by the study of Li (2023), which found that perceived ease of use of AI-based systems positively impacted students' attitude, behavioral intentions, and their actual use of AI-based systems among college students which aligns with previous researches indicating that effort expectancy is a crucial determinant of AI writing tools adoption such as ChatGPT (Rodriguez *et al.,* 2023; Foroughi *et al*., 2023; Hooda *et al.,* 2022).

In line with these findings, the study of Huang *et al.* (2020), also revealed that students are more likely to use technology in their learning if they perceive it as requiring minimal effort, thus enhancing the role of technology in education. Additionally, the study of Sudaryanto *et al.* (2023) highlighted the significant impact of perceived ease of use, particularly in the context of AI technology adoption within education. Their study demonstrates that students who perceive AI technology as enjoyable and user-friendly are more likely to embrace and incorporate it into their academic pursuits.

To further describe the results, perceived usefulness, another indicator of usage of artificial intelligence writing tools, garnered the second highest rating. The indicator perceived usefulness included items such as "AI-based writing tools help my performance in writing" and "AI-based writing tools help me identify and correct errors in my writing". With a mean score of

4.10 and a standard deviation of 0.80, results were described as high. This indicates that students are more inclined to use AI writing tools if they believe it will help them perform their writing tasks better.

The above findings are consistent with a study conducted by Kashive *et al.* (2020), which suggests that students are more likely to use technology if they perceive it as beneficial to their learning. According to Fauziah and Minarti (2023), AI writing tools enable students to identify writing errors, including grammar and structure issues, offer suggestions for correcting these errors, provide guidance on constructing sentences related to the writing topic, offer paraphrasing suggestions for paragraphs, and many more.

Further support for this assertion is found in the research conducted by Utami *et al.* (2023), in which students highlighted the significant benefits of AI writing tools. According to the study, these tools proved highly advantageous in facilitating the organization and development of their thoughts, fostering creativity, and providing guidance in structuring their written work. Moreover, Rad *et al.* (2023) discovered that AI's ability to predict and suggest content proves highly beneficial and valuable. Their research corroborates the findings of this study, indicating that AI's predictive capabilities assist in generating ideas more efficiently and introducing new topics to explore, thereby enhancing overall writing competence.

Although still high, the lowest indicator is the attitude towards usage. This indicator included items such as "I feel confident using AI-based writing tools" and "I am motivated to learn using AI-based writing tools". With a mean score of 3.63 and a standard deviation of 0.96, the result means that there is a positive link between the usage of AI writing tools by students and their attitude towards these applications. Based on the study's findings, the students have a positive outlook on using these AI writing tool applications.

This outcome substantiates the study of Zhao *et al*. (2023), which investigated the perceptions of university English as a Foreign Language (EFL) students regarding the utilization of AI-driven platforms for English writing instruction and learning. The outcomes of their investigation revealed that students expressed positive feedback regarding the efficacy of AI-driven platforms in facilitating the teaching and learning processes associated with English writing, especially when it comes to lessening the strain of using the language and improving the affective component of utilizing AI-based platforms. Furthermore, the result aligns with the study of Rahman *et al.* (2022), in which the study's findings revealed that students had positive perceptions of the implementation of Automated Writing Evaluation or AWE in improving their writing skills as well as in detecting grammatical errors among Malaysian public university students, stating that it had a positive impact on their writing skills.

The outcomes presented above is also consistent with the findings of the study of Kurniati and Fithriani (2022), whose findings revealed that students responded positively to using Quillbot, an AI writing tool, to enhance the quality of their academic writing. It was also observed that the use of Quillbot improved students' attitudes toward writing.

These outcomes substantiate the idea of Schepman and Rodway (2020), indicating that a student's general attitude, perception, or belief regarding the utilization of AI plays a pivotal role in its acceptance in education. This suggests that students who perceive AI

tools as beneficial are more inclined to incorporate them into their writing practices, thereby enhancing their writing skills.

Table 2. Level of Writing Competence among Senior High School Students

Indicators	Mean	Standard Deviation	Descriptive Level
Vocabularies	3.99	0.84	High
Sentence Structure	3.95	0.81	High
Content and Organization	3.96	0.77	High
Overall	3.97	0.81	High

Legend: 5.00 - 4.20 – Very High; 4.19 - 3.40 – High; 3.39 - 2.60 – Moderate; 2.59 - 1.80 – Low; 1.79 - 1.00 – Very Low

Table 2 presents the writing competence level of senior high school students, encompassing vocabulary, sentence structure, and content and organization. The overall mean rating for the level of writing competence among senior high school students, as indicated in Table 4, is 3.97, indicating a high descriptive level. With a standard deviation of 0.81, these results underscore the consistency of this high level of competence in vocabulary, sentence structure, and content and organization. These results suggest that students demonstrate a well-rounded ability to express themselves effectively in writing, showcasing commendable mastery across various writing elements.

This result is supported by the study of Mayekti (2020), where the writing competence of second-semester students in the English Education Department at UNU Purwokerto was assessed and the findings of the study concluded that the writing competence of the students was good. This is further supported by the study of Zidan (2020) which investigated the factors affecting the students' writing competencies. It revealed that the writing competencies of the ninth-grade students of two junior high schools in Yogyakarta were found to be at a good enough level.

The highest-scoring indicator among students' writing competence is vocabulary, with a mean rating of 3.99, signifying a high level of writing competence. This indicator included items such as "I can avoid repeating the same words in my writing" and "I can effectively replace overused words with synonyms". The results underscore the crucial role of vocabulary as a critical component in assessing writing skills, providing an accurate measure of proficiency. In line with this, Barus and Panjaitan (2022) highlighted the necessity of a broad vocabulary for writers, emphasizing its significant contribution to the clarity and accuracy of their writing.

This result is consistent with the findings of the study of Samsidar *et al.* (2022). They investigated the link between vocabulary knowledge and enhanced writing abilities in Muallimin Muhammadiyah Senior High School students. Their study discovered a significant relationship, emphasizing the crucial need for a large vocabulary to enable improved writing competence. Additionally, in line with the study of Wiguna *et al.* (2021) on

"The Correlation Between Vocabulary Mastery and Writing Ability," the research findings further confirm a significant correlation between students' vocabulary mastery and writing ability. This additional support strengthens the conclusion that a diverse vocabulary enhances students' writing skills.

The second highest indicator is content and organization, with a mean score of 3.96 or described as high, which implies that the students demonstrate a high level of competence in writing when it comes to content and organization. With an item such as "I can organize my ideas logically in my writing" and "I can create introductions and conclusions that grab attention and summarize my writing", the finding resonates with the study of Molina *et al.* (2021), which highlighted students' ability to deliver high-quality content while sustaining clarity in ideas. The result also suggests that students have strong organizational skills, aligning with the claim of Awada *et al.* (2020) that effective organization improves the flow of ideas, making the writing more accessible and impactful.

Despite achieving a high overall rating, sentence structure received the lowest mean score of 3.95, showing that students exhibited a commendable level of writing competence. The sentence structure included items such as “I can create grammatically correct sentences in my writing” and “I can use different type of sentences (simple, compound, complex) effectively”. With a high descriptive level, the result aligns with the findings of the study of Silawati (2019), emphasizing the positive correlation between sentence structure knowledge and essay writing skills. Christina (2021) similarly affirmed a substantial relationship between sentence structure mastery and students' writing abilities. In light of these results, it is recommended that students focus on enhancing their understanding of sentence structure to elevate their overall writing skills.

Table 3. Significant Relationship between the Usage of Artificial Intelligence Writing tools and Writing Competence of Senior High School Students

Usage of Artificial Intelligence Writing Tools of Senior High School Students				
Writing Competence	r	p-value	Decision on H_0	Interpretation
	.447	.000	Reject	Significant

Note: p<0.05 (significant)

Table 3 shows that there is a significant and positive relationship between the usage of artificial intelligence writing tools and writing competence of senior high school students with a p-value of .000, less than 0.05, and r-coefficient of .447. Thus, the null hypothesis is hereby rejected.

A high correlation between AI usage and writing competence suggests that students may be using these tools not only to correct grammar but also to brainstorm and organize ideas, which are functions traditionally requiring human guidance.

Based on the findings above, the strength of the correlation between the two variables is directly proportional, which means that an increase in the usage of artificial intelligence writing tools is correlated with an increase in students' writing competence. Therefore, the significant relationship suggests a significant link between the utilization of artificial intelligence writing tools and the writing competence of senior high school students.

These results align with the study of Woo *et al.* (2023), where they investigated the utilization of AI-generated text in student writing. Their study delved into the influence of AI-generated text on the quality of students' writing and examined the extent to which the integration of AI-generated text could contribute to elevated writing quality. The results of their investigation led to the conclusion that there is a significant relationship between the use of AI writing tool applications and students' writing competence.

These findings are further supported by the study of Alharbi (2023), where the findings of the study indicated that students are increasingly using a variety of AI-powered writing assistance tools to improve their writing. The evident surge in AI tool usage, as evidenced by the study, suggests a potential association between the utilization of these tools and the development of writing competence. As a result, it shows that there really is a significant correlation between the use of artificial intelligence writing tools and the writing competence of students.

Furthermore, the usage of artificial intelligence writing tools of the students is relevant to their writing competence. This is supported by the study conducted by Kurniati and Fithriani (2022) that indicated that AI-powered writing tools, such as Quillbot, can improve students' attitude towards writing, help language development, and contribute to student's ability to make high-quality writings. Thus, using artificial intelligence plays a significant role in attitude and language development, particularly when it comes to writing.

Additionally, Utami *et al.* (2023) supported this by highlighting a compelling perspective. According to the findings, most students regard artificial intelligence technology positively in academic writing classes. Notably, artificial intelligence's assistance significantly enhances students' writing performance due to its inherent value. Thus, the use of artificial intelligence has a significant relationship with students' writing competence.

Although, the present findings align with different studies who found that AI-assisted tools have positive influence in student writing, contrasting findings by Zhai (2024) argue that overreliance on AI may introduce risks such as diminished creativity, over-reliance, and ethical concerns like plagiarism and data bias. Their study suggests that students tend to accept AI-generated suggestions passively, thereby reducing opportunities for authentic skill-building.

Additionally, another study contradicts the findings. According to the study of Octaberlina et al. (2024), AI threatens the development of individual critical thinking ability, as dependency on this technology reduces the analytical quality and creativity of writers, as well as the active engagement in the process of thinking and reflection.

On the other hand, the study's results align with the principles of the Technology Acceptance Model (TAM) proposed by Fred Davis. In this theory, Burgess and Worthington (2021) stated that individuals' intentions to use technology directly impact their usage. It suggests that students perceive the benefits of using AI tools for writing (perceived usefulness) and find them easy to use (perceived ease of use). Therefore, this theory supports the study's findings that when students perceive technology as valuable and easy to use, their intentions increase, leading to their actual adoption.

Moreover, the study's findings align with the Theory of Planned Behavior (TPB) by Icek Ajzen, which posits that behavioral intention, attitude towards the behavior, and subjective norm collectively impact human behavior (Asare, 2015). In this context, the study's findings revealed how the theory's elements influence senior high school students' adoption of AI writing tools and their writing competence. The investigation delves into whether students have a solid intention to use AI writing tools, their attitudes towards them, the influence of social norms, and their perceived control over adopting such technology. By applying TPB, the study provided insights into the psychological factors driving the integration of AI writing tools into students' writing competence, ultimately contributing to understanding the relationship between the usage of AI writing tools and writing competence among senior high school students.

Having said that, although a significant correlation was observed between the usage of AI writing tools and students' writing competence, it is important to consider that this does not necessarily suggest a causal relationship. Other factors, such as prior writing ability, teacher feedback, or students' motivation, might also influence the observed competence levels.

Conclusion and Recommendations

Based on the findings of the study, the following conclusions are presented:

The senior high school students displayed a high utilization of artificial intelligence writing tools. This signifies that student find these tools useful and consider them easy to use, fostering a positive attitude toward their integration into the writing process. Consequently, students can effectively employ AI writing tools as valuable resources for refining their writing skills.

Additionally, the senior high school students exhibited an overall high level of writing competence, showcasing proficiency in critical areas such as vocabulary, sentence structure, and content organization. This competence was not only a reflection of their adeptness in traditional writing skills but also indicative of their adaptability to emerging technologies.

The study established a significant relationship between the usage of artificial intelligence writing tools and the writing competence of senior high school students. This correlation emphasizes the influential role of AI writing tools in shaping and enhancing students' writing abilities. The findings suggest that these tools can be instrumental in assisting students in creating high-quality written compositions.

The study underscores the educational significance of incorporating artificial intelligence writing tools into the senior high school curriculum. The identified correlation between using these tools and students' writing competence positively impacts learning outcomes in written expression. This highlights the potential of technology integration to contribute positively to the educational environment.

The overall results concluded that there is a positive and significant relationship between the usage of artificial intelligence writing tools and the writing competence of senior high school students.

Based on the findings and conclusion of the study, the following recommendations are offered for consideration.

The Department of Education (DepEd) may lead an initiative advocating for the responsible integration of AI writing

tools in high school curricula. This initiative is encouraged to involve collaboration with tech experts, AI developers, instructional designers, and curriculum experts to: develop standardized guidelines for AI tool usage in classroom settings, ensuring alignment with learning competencies; launch pilot programs in select schools to assess the effectiveness and feasibility of AI-enhanced instruction; provide funding for digital infrastructure and resource access, especially for under-resourced schools.

School administrators may support the integration of AI writing tools by: Organizing capacity-building programs (e.g., certified training workshops, webinars, and mentoring) focused on instructional AI use; implementing school-based AI literacy initiatives, such as establishing writing labs where students can access AI-assisted writing environments; monitoring and evaluating the impact of AI adoption on student performance through regular assessments and teacher feedback loops.

Furthermore, teachers may undergo training to integrate AI writing tools, emphasizing collaborative implementation and continuous monitoring of students' writing competence for ongoing support and adjustments. They are encouraged to: Participate in continuous professional development (CPD) focused on digital pedagogy and AI ethics; design lesson plans that blend AI-assisted writing with traditional methods, ensuring students learn both tool usage and critical writing skills; conduct classroom-based action research to monitor and document students' writing progress with AI integration.

Parents may also collaborate with schools to raise awareness about the positive impact of AI writing tools on children's writing skills, fostering communication between parents and teachers for a holistic approach to students' writing development. They may also promote responsible and balanced use of AI tools at home, ensuring children use them ethically and not as shortcuts and encourage children to reflect on how AI suggestions improve their writing rather than just accepting auto-generated content.

Moreover, students may adopt AI writing tools as supplementary resources for skill enhancement and not as a primary content generator. Emphasizing responsible usage and a balanced approach that integrates technological tools with traditional methods is also imperative.

Lastly, future researchers may broaden the scope of inquiry by conducting studies across multiple schools and grade levels and using different research methods to understand their impact better. They may also consider conducting experimental research to determine causal relationships between AI writing tool usage and improvements in specific writing dimensions (e.g., coherence, grammar, vocabulary), as well as implementing longitudinal research designs to track how AI writing tools affect students' writing skills over time.

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