

Artificial Intelligence (AI) Usage and Its Influence to the Students' Academic Writing: A Quantitative – Correlation Investigation

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DOI: <https://dx.doi.org/10.47772/IJRISS.2024.804216>

Received: 25 April 2024; Accepted: 02 May 2024; Published: 14 May 2024

ABSTRACT

This study dealt with the artificial intelligence (AI) usage and its influence on students' academic writing. The primary goal of the study was to determine the level of artificial intelligence (AI) usage and students' academic writing in terms of their respective indicators, the significant difference between artificial intelligence (AI) usage and students', and what domains of artificial intelligence (AI) substantially influenced students' academic writing. Also, this study utilized a quantitative-correlational design with 335 participants among Junior High School and Senior High School students in Lorenzo S. Sarmiento Sr. National High School. The average weighted mean, Pearson R, and multiple regression analysis were the statistical tools used in this study. Along with this, the results showed a high level of artificial intelligence (AI) usage in terms of satisfaction, AI literacy, relevance of AI, and confidence. Likewise, results showed a high level of students' academic writing in terms of usefulness, ease of use, and attitude towards usage. In addition, there was a high correlation, and a significant relationship between artificial intelligence (AI) usage and its influence on the students' academic writing. Hence, this led to the rejection of the null hypothesis. The domains of artificial intelligence (AI) usage that influenced students' academic writing are the relevance of AI, confidence, and AI literacy. While satisfaction, as a domain of artificial intelligence (AI) usage, had no significant influence on students' academic writing. Thus, educational institutions could harness the positive influence of artificial intelligence (AI) on students' academic writing, creating a more technologically advanced, collaborative, and effective learning environment while encouraging students to participate in AI-assisted activities contributing to better progress and improved self-regulated learning as they interacted with AI tools and their peers in an academic setting.

Keywords: STEM, Artificial Intelligence (AI), Students' academic writing, Philippines

INTRODUCTION

Academic writing has been a challenge for many international students in New Zealand, including those from Saudi Arabia, as it requires critical thinking and a high level of English proficiency (Ankawi, 2020). Similarly, students in Science, Technology, Engineering, and Mathematics (STEM) disciplines, who seldom engage in academic writing during their studies, encounter significant difficulties with this complex task (Schmohl et al., 2020). According to Writernjerih (2023), academic writing plays a crucial role in higher education and beyond, serving as a fundamental skill that enables individuals to engage in critical thinking,

articulate their ideas effectively, and contribute to the intellectual discourse within their field. Additionally, it is necessary for practical purposes, as students will need to write essays for various academic endeavors (Englist, 2023). Furthermore, the ability to write in an academic style is essential for disciplinary learning and critical for academic success (Fang, 2021).

In the Philippine context, where many people still struggle to access highquality education, artificial intelligence (AI) has the potential to completely revolutionize how learning is delivered, customized, and accessed (Pepino, 2023). The Intercultural Development Research Association (2023) emphasizes that a basic understanding of artificial intelligence (AI) systems enables students to engage and ideate with these technologies safely, responsibly, and ethically. Jimenez and

Boser (2021) stated that the use of machine-based artificial intelligence (AI) is already widespread in education. Students across various countries are increasingly leveraging artificial intelligence (AI) technology to enhance their writing processes (Malik et al., 2023). artificial intelligence (AI) - powered tools offer valuable support in different aspects of writing academic essays, including language correction, grammar checking, and proofreading (Alharbi, 2023). These tools help students identify and correct language errors, improving the overall clarity and coherence of their manuscripts (Dale & Viethen, 2021). Artificial intelligence (AI) has the potential to create a more inclusive, efficient, and engaging learning environment for students around the world (Inspiroz, 2023).

In Region XI, particularly in Davao City, Franca and Napil (2022) reported that among the 200 students in selected schools, 37.5% still lacked the proficiency to work on their academic writing in class. Furthermore, a study conducted by Eman-Bangkulit and Limpot (2022) posited that most students in some schools in Davao del Norte and Davao del Sur could not write properly during their classes. Consequently, in the local Municipality of Mawab, the researchers observed that some students are still struggling to write academic texts appropriately. This prompted the researchers to investigate whether artificial intelligence (AI) could significantly influence the growing problem of students' academic writing in Lorenzo S. Sarmiento Sr. National High School.

Research Objectives

1. To determine the level of artificial intelligence (AI) usage among students in Lorenzo S. Sarmiento Sr. National High School in terms of:

- 1.1 satisfaction;
- 1.2 the relevance of AI;
- 1.3 confidence; and
- 1.4 AI Literacy.

2. To find out the level of students' academic writing among students in Lorenzo S. Sarmiento Sr. National High School in terms of:

- 2.1 perceived usefulness;
- 2.2 perceived ease of use; and
- 2.3 attitude towards usage.

3. To find out the significant relationship between the artificial intelligence (AI) usage and students' academic writing among the students of Lorenzo S. Sarmiento Senior National High School.

4. To determine which domains of artificial intelligence (AI) usage that significantly influences the students' academic writing among students of Lorenzo S. Sarmiento Sr. National High School.

METHODOLOGY

This study employed a quantitative, non-experimental research design utilizing a correlational technique. This method was used when the objective is to describe the status of the situation as it existed at the time of the study and explore the causes of a particular phenomenon. In correlation research, it involves collecting data in order to determine whether the degree of a relationship exists between two more quantifiable variables (Gay et al., 2006). This survey dealt on quantitative data about the said phenomenon. The quantitative aspect is an appropriate schedule for gathering the data, designed for the target respondents to answer the questions. The process of gathering the data was based on the use of the questionnaire. The focus of the study was to determine the influence of artificial intelligence (AI) usage on students' academic writing among the learners in Lorenzo S. Sarmiento Sr. National High School.

Population and Sample

The respondents were selected through purposive sampling and a complete enumeration of 335 participants, all of whom are learners from Lorenzo S. Sarmiento Sr. National High School. These students were considered ideal respondents due to their active engagement with artificial intelligence (AI) and their participation in diverse academic writing tasks within the classroom setting, including essays, research papers, and analytical assignments, showcasing their comprehensive understanding and involvement in the subject matter. The distribution of respondents across grade level are outlined in Table 1 which are students from Lorenzo S. Sarmiento Sr. National High School for the school year 2023-2024. The school is located in Mawab District, Davao de Oro, Philippines.

Statistical Tool

The following statistical tools were utilized for the data analysis and interpretation.

Mean. This statistical tool was used to determine the level of artificial intelligence (AI) usage and students' academic writing among students of Lorenzo S. Sarmiento Sr. National High School.

Pearson (r). This statistical tool was used to determine the significance of the relationship between artificial intelligence (AI) usage and students' academic writing among students of Lorenzo S. Sarmiento Sr. National High School.

Multiple Regression Analysis. This statistical tool was used to determine the influence of artificial intelligence (AI) usage and students' academic writing among students of Lorenzo S. Sarmiento Sr. National High School.

RESULTS

Level of Artificial Intelligence (AI) Usage

Shown in Table 2 are the mean scores for the indicators of artificial intelligence (AI) usage among students in Lorenzo S. Sarmiento Sr. National High School has an overall mean of 3.98 and is described as high with a standard deviation of 0.56. The high level could be attributed to the high rating given by the respondents in all indicators. This entails that the respondents' responses to artificial intelligence (AI) usage is positive in terms of satisfaction, AI literacy, relevance of AI, and confidence.

The cited overall mean score was the result obtained from the following computed mean scores from highest to lowest: 4.03 or high for AI Literacy with a standard deviation of 0.57; 4.00 or high for satisfaction with a standard deviation of 0.57; 3.96 or high for confidence with a standard deviation of 0.54; and 3.91 or high for relevance of AI with a standard deviation of 0.57.

Table 2. Level of Family Involvement

Indicators	Mean	SD	Descriptive Equivalent
Satisfaction	4.00	0.57	High
Relevance of AI	3.91	0.57	High
Confidence	3.96	0.54	High
AI Literacy	4.03	0.57	High

Level of Students' Academic Writing

Shown in Table 3 are the mean scores for the indicators of students' academic writing in Lorenzo S. Sarmiento Sr. National High School with an overall mean of 4.04 and described as high with a standard deviation of 0.57. The high level could be attributed to the high rating given by the respondents in all indicators. This entails that the respondents' responses to the level of students' academic writing are positive in terms of perceived usefulness, perceived ease of use, and attitude towards usage.

The cited overall mean score was the result obtained from the following computed mean scores from highest to lowest: 4.08 or high for attitude towards usage with standard deviation of 0.58; 4.08 or high for perceived usefulness with standard deviation of 0.56; and 3.95 or high for perceived ease of use with standard deviation of 0.58.

Table 3. Level of Saving and Spending Behaviours

Indicators	Mean	SD	Descriptive Equivalent
Perceived Usefulness	4.08	0.56	High
Perceived Ease of Use	3.95	0.58	High
Attitude towards Usage	4.08	0.58	High
Overall	4.04	0.57	High

Significance on the Relationship between Artificial Intelligence (AI) Usage and Students' Academic Writing

One crucial purpose of this study is to determine whether or not artificial intelligence (AI) usage has a significant relationship with students' academic writing among students in Lorenzo S. Sarmiento Sr. National High School. Pearson r was used to determine the correlation between the two variables.

The results revealed that artificial intelligence (AI) usage and students' academic writing has a significant relationship. This result is due to a p – value of <.001, which is less than the 0.05 p-value. Hence, this leads to the decision that the null hypothesis, which stated that there is no significant relationship between artificial intelligence (AI) usage and students' academic writing among students of Lorenzo S. Sarmiento Sr. National High School is rejected. Furthermore, Pearson's R value which is 0.754 means that there is a high correlation between artificial intelligence (AI) usage and students' academic writing.

Multiple Regression Analysis of The Influence of Artificial Intelligence (AI) Usage and Students' Academic Writing

Using the Multiple Regression Analysis, the data revealed that the influence of artificial intelligence (AI)

usage to the students' academic writing has an f-value of 119.185 and corresponding significance p-value of $< .001$ which was significant. This means that the level of artificial intelligence (AI) usage influences the students' academic writing since the probability is less than 0.05. The R square of 0.591 implies that 59.1% of the students' academic writing is influenced by the artificial intelligence (AI) usage, while 40.9% remaining were not covered by the study and is influenced by other factors.

DISCUSSIONS

Level of Artificial Intelligence (AI) Usage Presented in the previous chapter were the results of the level of artificial intelligence (AI) usage. It was reported as high, indicating a significant presence of artificial intelligence (AI) usage among the students. Upon examining the research conducted by Buenano-Fernandez et al. (2019), it was found that the study on the use of artificial intelligence (AI) in academic works revealed a positive increase in students' learning outcomes. Students expressed satisfaction with artificial intelligence (AI) tools, finding them helpful in enhancing their writing skills. The high usage of artificial intelligence (AI) emphasized students' recognition of its importance in improving their overall academic writing proficiency. Additionally, students demonstrated confidence in utilizing artificial intelligence (AI) for their academic tasks and showcased proficiency in artificial intelligence (AI) literacy by understanding and effectively navigating artificial intelligence (AI) concepts. This collective engagement demonstrated a comprehensive embrace of satisfaction, the relevance of AI, confidence, and AI literacy among the students.

Concerning satisfaction, the level of artificial intelligence (AI) usage among students is also high. This indicates consistently positive satisfaction, reflecting their contentment with various applications and tools of artificial intelligence (AI) in their educational journey. In line with this, it substantiates the assertions made by Perez (2023) stating that artificial intelligence (AI) has the potential to provide a wide range of benefits for education, thereby enhancing student satisfaction and engagement. Positive responses suggest that students find artificial intelligence (AI) to be a valuable asset, contributing to their overall learning experience, motivation, and commitment to academic tasks.

Level of Students' Academic Writing

The level of students' academic writing at Lorenzo S. Sarmiento Sr. National High School, as reflected by the respondents, attests to a high degree. This signifies that the results of the research conducted among the students at Lorenzo S. Sarmiento Sr. National High School were positive, indicating that a high level of students' academic writing is crucial to their academic journey. The study conducted validates the statement made by Fang (2021) that writing in an academic style is crucial for academic achievement and is required for studying academic disciplines.

Academic writing is viewed as a means of producing, codifying, conveying, assessing, renovating, teaching, and acquiring knowledge and ideologies. This aligns with the viewpoint presented by Writernjerih (2023), who argues that academic writing forms the foundation of higher education and scholarly endeavors. By honing these skills, individuals can effectively contribute to their field of study, engage in intellectual conversations, and make significant contributions to society. Western Washington University (2023) emphasizes that every academic writer employs rhetorical moves such as Grounding, Forwarding, and Countering. This perspective is further reinforced by the study conducted by Knight et al. (2020), which highlights the importance of these rhetorical moves across various academic writing styles, including essays and research abstracts, as well as in forms of writing that reflect on experiential learning.

Significance on the Relationship between Artificial Intelligence (AI) Usage and Students' Academic Writing

The present study unveils a significant relationship between artificial intelligence (AI) usage and students'

academic writing at Lorenzo S. Sarmiento Sr. National High School. This suggests that artificial intelligence (AI) usage influences students' academic writing, as evidenced by the provided data. The findings of this study align with Malik et al.'s (2023) research, affirming a notable relationship between these variables, where artificial intelligence (AI) usage significantly influences students' academic writing. This is consistent with Kukulska-Hulme's (2019) proposition that the utilization of artificial intelligence (AI) mobile apps, as a modern technology, profoundly impacts students' learning, effectively integrating technology to enhance learners' motivation and autonomy in academic writing.

Furthermore, the study implies that students' academic writing may depend on artificial intelligence (AI) usage, supporting Fitria's (2021) findings that artificial intelligence (AI) has the potential to enhance the quality of academic writing. Alharbi (2023) also supports this notion, asserting that artificial intelligence (AI) provides valuable support in various aspects of academic writing, including language correction, grammar checking, and proofreading. Wei and Chou (2020) highlight the critical role of artificial intelligence (AI) in generating ideas, expressing thoughts, formulating writing strategies, and fostering writing willingness, aligning with the current study.

Multiple Regression Analysis of the Influence of Artificial Intelligence (AI) Usage and Students' Academic Writing

The regression coefficient, designed to assess the significant influence of Artificial Intelligence (AI) Usage on students' academic writing, indicates that three out of the four domains—namely AI literacy, relevance of AI, and confidence—have significant influence on students' academic writing. Conversely, satisfaction was found to be non-significant in influencing students' academic writing.

The results of the study align with research conducted by Gayed et al. (2022), supporting the positive impact of artificial intelligence (AI) usage on students' academic writing. Additionally, the findings affirm the value of artificial intelligence (AI) highlighted by Makarius et al. (2020), particularly in providing timely feedback and improving academic writing skills. Lamas and Arnab's (2022) investigation into the use of artificial intelligence (AI) among students in academic writing also complements the study's results, showcasing a positive impression toward their grades.

CONCLUSION

Conclusions are drawn based on the results of the study. The study concludes that the level of influence of artificial intelligence (AI) usage among students in Lorenzo S. Sarmiento Sr. National High School is high, as well as its indicators, namely AI satisfaction, relevance of AI, confidence, and AI literacy. Furthermore, the overall level of students' academic writing among students in Lorenzo S. Sarmiento Sr. National High School is also high, as well as all three domains namely perceived usefulness, perceived ease of use, and attitude towards usage. Moreover, the findings reveal that there is a significant relationship and a high correlation between artificial intelligence (AI) usage and students' academic writing. Moreover, the domains of artificial intelligence (AI) usage that significantly influence students' academic writing are the relevance of AI, confidence, and AI literacy. However, satisfaction, as a domain of artificial intelligence (AI) usage, has no significant influence on students' academic writing.

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