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AI-Assisted Writing Practices and Academic Writing Integrity among Secondary Learners

Jestoni M. Atara[1*] and Severino T. Morales Jr.[1,2]
[1]*Northeastern College*
[*]*jestoni.atara@deped.gov.ph*, [2]*severinomoralesjr@northeasterncollege.edu.ph*

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ABSTRACT

This study investigated the relationship between AI-assisted writing practices and academic writing integrity among secondary learners at San Mariano National High School. A cross-sectional explanatory predictive design was employed, supported by proportionate stratified random sampling and a researcher-developed questionnaire that underwent expert validation, pilot testing, and reliability analysis. Data were analyzed through descriptive statistics and partial least squares structural equation modeling. The findings showed that learners demonstrated a high level of AI-assisted writing practice, particularly in language refinement and drafting support, while their academic writing integrity remained moderate. Information verification and disclosure of AI assistance emerged as significant positive predictors of academic writing integrity, while excessive reliance on AI-generated drafting had a significant negative effect. Revision and feedback use also contributed positively, whereas idea generation, planning, and language refinement did not independently predict integrity. The structural model explained a substantial proportion of the variance in academic writing integrity and demonstrated moderate predictive relevance. The results indicated that the main concern was not AI use itself, but the manner in which learners applied, verified, disclosed, and integrated generated content into academic work. The study recommended the adoption of clear school-based AI guidelines, disclosure statements, source-checking procedures, staged drafting requirements, and explicit instruction on authorship, citation, and responsible AI use. These measures may help schools benefit from AI-supported writing while preserving learner accountability, originality, and independent academic judgment.

Keywords: *academic integrity, AI-assisted writing, artificial intelligence, learner authorship, secondary education, Writing practices*

INTRODUCTION

Writing remains a central part of secondary education because it allows learners to explain ideas, organize knowledge, examine evidence, and communicate what they understand. The tools used in writing, however, have changed considerably. Learners can now access artificial intelligence applications that generate outlines, suggest sentences, correct grammar, summarize readings, paraphrase passages, and provide comments on written work. Evidence from Norwegian high schools showed that learners' reported use of generative artificial intelligence for school purposes increased from 43.7 percent in 2023 to 71.4 percent in 2024. This rise suggests that AI-assisted writing is becoming part of how many secondary learners approach school assignments, even when they remain uncertain about the accuracy, trustworthiness, and proper use of generated content (Bueie et al., 2026).

AI-assisted writing covers a broad range of practices rather than a single form of technology use. A learner may ask an AI tool to generate possible topics, clarify an assignment, prepare an outline, suggest transitions,

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improve sentence construction, or comment on an existing draft. These forms of assistance may help learners begin difficult tasks and recognize weaknesses in their writing. Bueie et al. (2026) explained that generative AI can support planning, organization, revision, editing, and adjustment of text for a particular audience. Such support can be useful when learners remain responsible for their ideas, evaluate the suggestions they receive, and make independent decisions about the final composition. UNESCO also maintained that generative AI should be applied through a human-centered and age-appropriate approach that preserves human judgment and educational purpose (Miao & Holmes, 2023).

The convenience offered by AI tools can also alter how learners experience the writing process. Writing normally requires the learner to generate ideas, select relevant information, arrange arguments, choose appropriate language, and revise unclear sections. These actions develop reasoning, persistence, and control over written expression. When an AI application performs most of these tasks, the submitted output may appear polished without fully representing the learner's understanding or writing ability. Yeo (2023) observed that AI authoring applications can paraphrase, summarize, extend, and create texts with little original contribution from the user. For secondary learners who are still developing foundational writing skills, excessive dependence on generated content may reduce opportunities to practice composing, evaluating sources, and expressing an individual academic voice.

These concerns are closely connected with academic writing integrity. The International Center for Academic Integrity defines academic integrity through the values of honesty, trust, fairness, respect, responsibility, and courage. These values require learners to present their work truthfully, acknowledge assistance, respect intellectual ownership, and accept responsibility for the accuracy and originality of submitted outputs (International Center for Academic Integrity, 2021). AI-generated writing complicates these responsibilities because the produced text may not be copied directly from one identifiable author, yet it may still be submitted without meaningful intellectual work or proper disclosure. A study of student perceptions found that learners' ethical beliefs strongly influenced whether they considered AI-assisted writing acceptable and whether they used it in their academic work. The findings also showed that learners may view AI misuse differently from conventional plagiarism, which can make the boundary between assistance and misconduct difficult to recognize (Lund et al., 2025).

Responsible AI use in writing therefore requires more than the ability to operate an application. Learners need to know when AI assistance is permitted, what forms of assistance must be disclosed, how generated information should be verified, and which parts of an assignment must represent their independent work. They must also understand that fluent language does not guarantee factual accuracy, appropriate evidence, or sound reasoning. Adams et al. (2023) identified transparency, responsibility, privacy, fairness, freedom, pedagogical appropriateness, children's rights, and AI literacy as important principles for the use of artificial intelligence in K to 12 educations. These principles place the welfare and learning of children above convenience. They also support the view that teachers should guide learners in questioning AI outputs instead of treating generated responses as automatically correct.

The use of AI in writing also raises questions about whether written assignments continue to measure what learners genuinely know and can do. Generative AI can provide immediate feedback, suggest improvements, and assist learners in assessing their own work. These functions may support learning when used as part of guided drafting and revision. At the same time, AI can produce complete answers and coherent essays that conceal gaps in the learner's knowledge or writing competence. A scoping review by Xia et al. (2024) found that generative AI offered opportunities for immediate feedback, varied feedback, and self-assessment, while academic integrity remained one of its major challenges. The authors argued that educational assessment should promote responsible learning, self-regulation, critical thinking, and the careful checking of generated information. Their findings indicate that schools should not evaluate AI use only by whether a tool was opened, but by how it affected the learner's thinking, decision-making, and ownership of the submitted work.

The issue has gained formal importance in Philippine basic education. On February 20, 2026, the Department of Education issued DepEd Order No. 003, series of 2026, titled *Foundational Guidelines on Artificial*

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Intelligence in Basic Education. The issuance of a national policy devoted to AI shows that its use is no longer a concern limited to technology subjects or higher education. It now requires attention across teaching, learning, assessment, school management, and learner protection. For secondary schools, the policy strengthens the need to understand how learners are already using AI and whether their practices support or weaken honest academic work (Department of Education, 2026).

Much of the published research on AI-assisted writing and academic integrity has focused on university students. Research involving secondary learners remains more limited, even though high school learners are already using generative AI for schoolwork. Bueie et al. (2026) further noted that beliefs and practices concerning AI-assisted writing cannot be assumed to be the same across schools and countries because writing is shaped by institutional expectations, available resources, teacher guidance, and local academic norms. Findings from universities or foreign school systems may therefore provide useful direction, but they cannot fully explain how secondary learners in a Philippine public school use AI when completing written assignments. A school-based inquiry is needed to identify the specific forms of AI assistance used by learners and determine how these practices relate to honesty, originality, proper acknowledgment, accountability, and responsible authorship.

Against this background, the study examine how learners use AI tools during planning, drafting, revising, editing, and completing academic writing tasks. It also seeks to determine how these practices are associated with their observance of academic writing integrity. Conducting the study at San Mariano National High School will provide evidence drawn from the actual experiences of secondary learners rather than relying only on assumptions about AI use. The findings may help teachers design writing activities that allow appropriate technological support while preserving learner authorship, independent thinking, accurate source use, and honest submission of written work. They may also support the development of clearer classroom expectations and learner guidance that treat AI as a supervised writing aid rather than a substitute for intellectual effort.

Literature Review

AI Assistance Across the Writing Process

Artificial intelligence can support learners at several stages of writing, including topic selection, idea generation, outlining, drafting, language correction, and revision. Barrot (2023) explained that ChatGPT may serve as an accessible writing assistant by offering immediate responses related to grammar, vocabulary, coherence, cohesion, and writing conventions. These functions can help secondary learners who struggle to begin a composition or express ideas clearly in English. The value of AI assistance, however, depends on the way learners interact with the tool. Asking for explanations, examples, or feedback preserves more learner participation than requesting a complete essay and submitting it with minimal revision. Kohnke et al. (2023) likewise noted that conversational AI can provide language practice, generate sample texts, explain errors, and respond to individual learning needs. Its capacity to produce immediate and personalized assistance may encourage learners to review their drafts more frequently. At the same time, generated suggestions may contain inaccurate information, unsuitable expressions, or language that does not reflect the learner's actual ability. AI-assisted writing should therefore be examined according to the specific tasks delegated to the tool and the extent to which learners remain involved in producing the final composition. This distinction is important because assistance that strengthens planning and revision differs considerably from assistance that replaces authorship and independent writing.

Feedback, Revision, and Learner Control

The educational value of AI-generated feedback rests on whether learners actively evaluate and apply the suggestions they receive. Large language models can provide explanations, examples, corrective comments, and alternative ways of presenting an idea, giving learners opportunities to revise without waiting for teacher feedback. Kasneci et al. (2023) observed that these systems may support personalized learning and offer assistance suited to individual questions, but they may also produce biased, misleading, or factually incorrect responses. Learners who accept every suggestion without checking it may improve the surface appearance of a composition while failing

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to understand why a revision is necessary. Farrokhnia et al. (2024) similarly identified personalized responses and immediate interaction as strengths of ChatGPT, while recognizing dependence, inaccurate outputs, and weakened critical thinking as possible threats. These findings show that learner control is an essential feature of responsible AI-assisted writing. Secondary learners should be able to compare AI feedback with assignment instructions, classroom lessons, reliable sources, and their intended meaning before changing a draft. They should also retain the authority to reject suggestions that alter their ideas or writing voice. Examining the frequency and purpose of AI use alone may therefore be insufficient. Attention must also be given to whether learners question generated feedback, make deliberate revisions, and remain intellectually responsible for the content of their written work.

Authorship, Originality, and Disclosure of AI Use

Academic writing integrity becomes difficult to judge when learners use AI without clearly distinguishing their own contribution from generated material. Cotton et al. (2024) argued that text-generating systems create academic integrity concerns because they can produce convincing answers that may be submitted as original student work. Traditional plagiarism checking may not adequately identify this practice because the output is newly generated rather than copied word for word from an existing source. As a result, the absence of a plagiarism match does not automatically establish authentic authorship. Integrity should instead be considered through the learner's intellectual contribution, truthful representation of work, acknowledgment of assistance, and responsibility for the final text. Tlili et al. (2023) also identified cheating, honesty, misinformation, privacy, and manipulation among the concerns surrounding educational chatbot use. These issues suggest that learners may violate writing integrity not only by submitting a fully generated essay but also by presenting invented information, fabricated references, or heavily rewritten material without verification or disclosure. Clear expectations are therefore needed regarding acceptable assistance, such as brainstorming or grammar checking, and unacceptable substitution, such as allowing AI to develop the main argument or produce the entire response. Disclosure practices can further help teachers evaluate how learners used the technology and whether the submitted composition still demonstrates their knowledge, reasoning, and writing ability.

AI Literacy and School-Based Writing Guidelines

Responsible AI-assisted writing requires learners to understand both the capabilities and limitations of the tools they use. AI literacy includes the ability to prepare appropriate prompts, assess generated responses, verify claims, identify possible bias, protect personal information, and explain how AI contributed to a written task. It also involves recognizing that a polished response may still contain weak reasoning or false information. Chan (2023) proposed that educational AI policies should address pedagogical, governance, and operational concerns rather than focus solely on prohibition. From this perspective, schools need to align AI use with learning outcomes, establish rules for disclosure and accountability, protect data privacy, and provide training for both teachers and learners. A school-wide approach can reduce confusion caused by differing classroom expectations and help learners understand why some forms of AI assistance may be permitted in one activity but restricted in another. Farrokhnia et al. (2024) further stressed that the educational benefits of ChatGPT are closely tied to informed implementation and the management of risks such as dependence, misinformation, and academic misconduct. For secondary learners, guidelines should use language appropriate to their age and provide concrete examples of permitted, limited, and prohibited practices. Such guidance allows schools to address misconduct while still recognizing that carefully supervised AI use may support writing development. Assessing learners' knowledge of these expectations is therefore essential when examining the relationship between AI-assisted writing practices and academic writing integrity.

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METHODS

Research Design

The study employed a cross-sectional explanatory predictive design using a latent-variable modeling approach. This design allowed the researcher to examine AI-assisted writing practices and academic writing integrity as multidimensional constructs measured at a single period. It also permitted an assessment of whether variations in learners' use of artificial intelligence during writing predicted corresponding differences in their observance of academic writing integrity. The design went beyond a basic descriptive-correlational procedure because it examined both the quality of the measurement model and the predictive relationship between the study variables. AI-assisted writing practices served as the exogenous construct, while academic writing integrity served as the endogenous construct. The use of latent-variable analysis also accounted for measurement error among the questionnaire indicators instead of treating each observed score as perfectly accurate.

Research Locale

The investigation was conducted at San Mariano National High School in San Mariano, Isabela. The school was selected because it served secondary learners who regularly completed written academic requirements across different learning areas. These tasks included essays, reaction papers, written reports, research-related activities, reflective compositions, and other classroom outputs that could involve the use of digital writing tools. The locale also provided an appropriate setting for examining how learners used artificial intelligence when planning, drafting, revising, and completing written requirements. Conducting the study within the school allowed the researcher to gather evidence grounded in the learners' actual academic writing experiences and the expectations applied to their submitted work.

Participants and Sampling Technique

The participants were officially enrolled secondary learners of San Mariano National High School during the period of data collection. Eligible learners had completed at least one formal academic writing activity during the school year and had secured parental or guardian consent together with their own written assent. Learners were not required to be frequent users of artificial intelligence because nonuse, limited use, and regular use were all considered meaningful responses within the study.

The required sample was established through an a priori power analysis based on the complexity of the proposed structural model, a significance level of .05, a statistical power of at least .80, and a minimum effect size that the analysis was expected to detect. Proportionate stratified random sampling was then applied. Grade levels formed the sampling strata so that each secondary level was represented according to its share of the eligible learner population. Participants within each stratum were selected using a computer-generated random sequence. This procedure reduced selection bias and prevented the sample from being dominated by learners from only one grade level.

Research Instrument

Data were collected through a researcher-developed questionnaire titled the *AI-Assisted Writing Practices and Academic Writing Integrity Questionnaire*. The instrument consisted of two major scales and did not request personal profile information. The first scale measured AI-assisted writing practices through idea generation and planning, drafting support, language refinement, revision and feedback use, information verification, and disclosure of AI assistance. The second scale assessed academic writing integrity through original authorship, acknowledgment of sources, truthfulness in presenting work, verification of information, responsible use of generated content, and accountability for submitted outputs. Responses were recorded using a five-point agreement scale ranging from 1, strongly disagree, to 5, strongly agree.

The initial item pool was developed from the objectives of the study and the literature concerning AI-supported writing, learner authorship, source acknowledgment, information accuracy, and responsible technology use. The statements were written in language appropriate for secondary learners and avoided highly technical

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expressions. A limited number of negatively worded items were included to identify automatic response patterns without creating unnecessary difficulty for the participants.

Content validation was conducted by specialists in English language education, educational technology, research measurement, and secondary education. The validators assessed each item according to relevance, clarity, age appropriateness, and alignment with its intended dimension. The item-level Content Validity Index values ranged from 0.83 to 1.00, while the complete instrument obtained a scale-level Content Validity Index based on average agreement of S-CVI/Ave = 0.95. Items that received lower ratings were revised for clearer wording, and overlapping statements were removed. Cognitive interviews were also conducted with learners who were not included in the main study. Their explanations revealed several terms that required simplification and helped improve statements that could have been interpreted in more than one way.

The revised instrument was pilot-tested among secondary learners from another public school with characteristics comparable to those of the research locale. The pilot participants were excluded from the final administration. Corrected item-total correlations ranged from 0.42 to 0.78, indicating that the retained statements contributed adequately to their respective scales. The AI-Assisted Writing Practices Scale obtained a Cronbach's alpha coefficient of $\alpha = 0.931$, while the Academic Writing Integrity Scale obtained $\alpha = 0.944$. The complete questionnaire produced an overall Cronbach's alpha coefficient of $\alpha = 0.952$. McDonald's omega values were also computed to support the internal consistency findings. The AI-Assisted Writing Practices Scale obtained $\omega = 0.936$, the Academic Writing Integrity Scale obtained $\omega = 0.947$, and the complete instrument obtained $\omega = 0.954$. These coefficients showed that the questionnaire had excellent internal consistency.

Construct validity was assessed during the main analysis through partial least squares structural equation modeling. Standardized indicator loadings ranged from 0.708 to 0.906, while average variance extracted values ranged from 0.609 to 0.750. Composite reliability coefficients ranged from 0.861 to 0.923, confirming acceptable convergent validity and construct reliability. Discriminant validity was supported by heterotrait-monotrait ratio values ranging from 0.43 to 0.83, all of which remained below the established threshold. The findings showed that the dimensions were related but measured distinct aspects of AI-assisted writing practices and academic writing integrity. No item was removed solely to increase a statistical coefficient when its content was necessary for adequately representing the construct.

Data Gathering

Approval to conduct the study was secured from the appropriate education authorities and the school head before the recruitment of participants. The researcher coordinated with designated school personnel to identify eligible learners and organize the distribution of consent and assent forms. Parents or guardians received an explanation of the purpose of the study, the nature of participation, the type of information to be collected, and the measures adopted to protect the learners.

Questionnaire administration was scheduled during a period that did not interfere with examinations, graded classroom activities, or major school programs. Since the researcher was a teacher in the research locale, a trained research assistant facilitated the distribution and retrieval of the questionnaires to reduce the possibility that learners would feel compelled to participate or provide socially acceptable answers. Subject teachers were not allowed to view individual responses.

Before answering, participants received standardized instructions explaining that the study was concerned with their actual writing practices and not with identifying or punishing AI use. They were reminded that there were no correct or incorrect responses and that their answers would not affect their grades, conduct records, or relationship with the school. The questionnaire was completed individually, and participants placed the accomplished forms in sealed collection envelopes.

After retrieval, the questionnaires were assigned numerical codes. Forms were screened using predetermined criteria for missing responses, repeated answer patterns, and responses that showed little evidence of careful completion. Data from forms with substantial missing information were not included in the final

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analysis. Acceptable responses were encoded in a password-protected database and were checked against the original questionnaires to minimize encoding errors.

Data Analysis

The dataset was first examined for completeness, invalid entries, straight-line response patterns, extreme response times when available, and unusual multivariate observations. Missing data were evaluated before analysis. When the amount of missing information was minimal and appeared to occur randomly, an appropriate model-based imputation procedure was applied. Cases with extensive missing responses were excluded according to the rule established before data analysis.

Item responses were summarized using frequencies, percentages, medians, and interquartile ranges because the statements used ordered response categories. Construct scores were also presented using means and standard deviations to support comparison across the measured dimensions. Interpretation ranges were established before the analysis to avoid adjusting descriptive labels after the results became known.

The principal statistical treatment was partial least squares structural equation modeling. This method was selected because the investigation involved multidimensional latent constructs represented by several questionnaire indicators. It also allowed the measurement properties of the instrument and the predictive relationship between AI-assisted writing practices and academic writing integrity to be examined within one analytical model. The method was suitable for prediction-oriented research and was less dependent on strict multivariate normality than covariance-based procedures.

The measurement model was evaluated through outer loadings, Cronbach's alpha, rho_A, composite reliability, and average variance extracted. Convergent validity was considered adequate when the indicators shared sufficient variance with their assigned construct. Discriminant validity was examined through the heterotrait-monotrait ratio to determine whether AI-assisted writing practices and academic writing integrity remained empirically distinct. Variance inflation factors were inspected to detect problematic collinearity among the predictor dimensions.

The structural model was assessed through standardized path coefficients, coefficients of determination, effect sizes, and predictive relevance. Statistical significance was determined through bootstrapping with 10,000 resamples, producing bias-corrected confidence intervals for the estimated path coefficients. A path was considered statistically significant when its confidence interval did not include zero and its probability value was below .05. The coefficient of determination indicated the proportion of variation in academic writing integrity explained by AI-assisted writing practices, while the effect-size statistic showed the practical contribution of each writing-practice dimension.

Out-of-sample predictive ability was examined through PLSpredict rather than relying only on statistical significance and in-sample explanatory power. Prediction errors from the structural model were compared with those produced by a linear benchmark model. This procedure showed whether the model had practical value in predicting academic writing integrity among learners whose responses were not used to estimate the model.

An importance-performance map analysis was conducted after the structural model had met acceptable measurement and predictive standards. This analysis identified AI-assisted writing dimensions that had relatively strong effects on academic writing integrity but showed lower performance scores among participants. These dimensions were treated as possible priorities for school-based guidance, classroom instruction, and learner support. The analysis therefore provided information not only about whether the variables were related but also about which practices could receive greater educational attention.

Ethical Consideration

The study observed the ethical principles of voluntary participation, informed consent, learner assent, privacy, confidentiality, fairness, and protection from harm. Participation was not required as part of any subject, class requirement, or school clearance. Learners and their parents or guardians were informed that participation could be refused or discontinued without penalty.

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No names, learner reference numbers, account details, AI prompts, or copies of personal written outputs were collected. Individual answers were not disclosed to teachers, classmates, parents, or school administrators. The findings were reported only in summarized form, and no learner or class section was identifiable in the presentation of results.

Special care was taken because the subject involved behaviors that could be associated with academic misconduct. The questionnaire was not used to investigate particular cases, identify suspected violations, or recommend disciplinary action. Participants were informed that honest responses about AI use would not be treated as admissions of wrongdoing. This assurance reduced fear and supported more truthful reporting.

Printed questionnaires were stored in a locked cabinet, while encoded files were secured through passwords and restricted access. The data were retained only for the period required for research verification and publication. After the approved retention period, paper records were shredded and electronic files were permanently deleted. Any publication arising from the study protected the dignity of the participants and presented the findings without exaggeration, selective reporting, or concealment of results that did not support the expected relationship.

RESULTS AND DISCUSSION

Table 1. *Descriptive Results for AI-Assisted Writing Practices and Academic Writing Integrity*

Construct and dimension	Mean	Standard Deviation	Interpretation
AI-Assisted Writing Practices			
Idea generation and planning	3.72	0.74	High
Drafting support	3.89	0.81	High
Language refinement	4.03	0.68	High
Revision and feedback use	3.61	0.76	High
Information verification	2.96	0.83	Moderate
Disclosure of AI assistance	2.73	0.87	Moderate
Overall, AI-assisted writing practices	3.49	0.59	High
Academic Writing Integrity			
Original authorship	3.14	0.78	Moderate
Source acknowledgment	3.08	0.82	Moderate
Truthfulness in presenting work	3.39	0.71	Moderate
Information accuracy	3.21	0.77	Moderate
Responsible use of generated content	3.17	0.80	Moderate
Accountability for submitted work	3.71	0.66	High
Overall academic writing integrity	3.28	0.58	Moderate

The overall mean of 3.49 showed that the learners had a high level of AI-assisted writing practice. Language refinement received the highest mean of 4.03, followed by drafting support at 3.89. The learners commonly used AI tools to improve grammar, vocabulary, sentence structure, and the general presentation of their written work. They also relied on the tools when forming sentences or preparing sections of an academic composition. The result indicated that AI had become more closely associated with the production and polishing of text than with the careful examination of its accuracy.

Information verification obtained a moderate mean of 2.96, while disclosure of AI assistance received the lowest mean of 2.73. These findings revealed an imbalance in how the learners used AI. Although the tools were frequently used to draft and improve written outputs, learners were less consistent in checking generated claims

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or informing teachers that AI had been used. Khalifa and Albadawy (2024) identified idea development, content organization, editing, and language improvement as common areas in which AI can assist academic writing. They also emphasized that such assistance must be balanced with human judgment, ethical use, and transparent integration. The present finding suggested that learners benefited from the convenient features of AI, but responsible practices did not develop at the same level.

Academic writing integrity obtained an overall mean of 3.28, which was interpreted as moderate. Accountability for submitted work received the highest mean of 3.71, indicating that many learners recognized that they were responsible for the work they submitted. However, original authorship, source acknowledgment, information accuracy, and responsible use remained only moderate. The combination of high AI-assisted writing practice and moderate integrity showed that frequent use did not automatically lead to responsible use. A learner might accept responsibility for a submitted composition while still failing to disclose the extent of AI assistance, check generated statements, or preserve enough personal contribution in the final output.

The moderate result for source acknowledgment was especially important because AI-generated text often does not clearly display the sources from which information was derived. Chan (2025) found that students more readily identified direct AI generation as a form of misconduct but showed greater uncertainty about less visible uses, such as idea generation, rewriting, and language refinement. Such uncertainty can explain why learners may consider some AI-assisted practices harmless even when those practices significantly affect authorship and originality. Clearer instruction was therefore needed to show where acceptable assistance ended and where misrepresentation of work began.

Table 2. Reliability and Convergent Validity of the Measurement Model

Construct	Loading Range	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted
Idea generation and planning	0.732 to 0.861	0.824	0.832	0.883	0.654
Drafting support	0.755 to 0.889	0.857	0.864	0.905	0.706
Language refinement	0.741 to 0.872	0.839	0.846	0.892	0.674
Revision and feedback use	0.768 to 0.901	0.876	0.882	0.915	0.729
Information verification	0.721 to 0.854	0.812	0.819	0.874	0.635
Disclosure of AI assistance	0.708 to 0.842	0.783	0.791	0.861	0.609
Original authorship	0.769 to 0.894	0.878	0.884	0.916	0.732
Source acknowledgment	0.738 to 0.867	0.836	0.843	0.891	0.672
Truthfulness in presenting work	0.724 to 0.858	0.817	0.825	0.877	0.641
Information accuracy	0.747 to 0.875	0.845	0.851	0.895	0.681
Responsible use of generated content	0.781 to 0.906	0.889	0.895	0.923	0.750
Accountability for submitted work	0.756 to 0.884	0.862	0.869	0.907	0.710

All indicator loadings exceeded 0.70, with values ranging from 0.708 to 0.906. Cronbach's alpha values ranged from 0.783 to 0.889, while composite reliability coefficients ranged from 0.861 to 0.923. These results indicated that the items within every dimension measured a common underlying concept with adequate consistency. The coefficients were also below levels that might suggest unnecessary duplication among questionnaire statements.

The average variance extracted values ranged from 0.609 to 0.750. Every construct therefore accounted for more than half of the variance in its assigned indicators. Responsible use of generated content obtained the highest average variance extracted value of 0.750, while disclosure of AI assistance obtained the lowest value of 0.609. Although disclosure had the lowest value, it still met the required measurement standard. These findings

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supported the convergent validity of the questionnaire and justified the retention of all dimensions in the structural analysis.

Table 3. *Heterotrait-Monotrait Ratio Assessment*

Construct Pair or Comparison	HTMT Value	95% Confidence Interval	Result
Idea generation and planning with drafting support	0.79	0.71 to 0.84	Established
Drafting support with language refinement	0.81	0.74 to 0.86	Established
Language refinement with revision and feedback use	0.83	0.76 to 0.88	Established
Information verification with disclosure of AI assistance	0.76	0.68 to 0.82	Established
Original authorship with source acknowledgment	0.80	0.73 to 0.85	Established
Truthfulness with information accuracy	0.82	0.75 to 0.87	Established
Responsible use with accountability	0.81	0.74 to 0.86	Established
Overall AI-assisted practices with academic writing integrity	0.74	0.67 to 0.80	Established

The heterotrait-monotrait values ranged from 0.43 to 0.83, and none of the confidence intervals contained a value of 1.00. The results showed that the constructs were related but remained statistically distinguishable. For example, drafting support and language refinement shared common features, but they did not measure exactly the same practice. Original authorship and source acknowledgment were also closely related while representing separate responsibilities within academic writing integrity.

The distinction between AI-assisted writing practices and academic writing integrity was particularly important. The HTMT value of 0.74 showed that technology use and integrity were not interchangeable concepts. Learners could use AI frequently but still differ in the degree to which they disclosed assistance, verified information, acknowledged sources, and maintained ownership of their written work.

Table 4. *Structural Model Predicting Academic Writing Integrity*

Predictor	Path Coefficient	Standard Error	t-value	p-value	95% Bias-Corrected Confidence Interval	Effect Size	Decision
Idea generation and planning	0.06	0.05	1.20	0.230	-0.04 to 0.16	0.01	Not significant
Drafting support	-0.23	0.06	3.83	< 0.001	-0.35 to -0.11	0.08	Significant
Language refinement	0.04	0.05	0.80	0.424	-0.06 to 0.14	0.00	Not significant
Revision and feedback use	0.16	0.06	2.67	0.008	0.04 to 0.28	0.04	Significant
Information verification	0.31	0.05	6.20	< 0.001	0.21 to 0.41	0.15	Significant
Disclosure of AI assistance	0.27	0.05	5.40	< 0.001	0.17 to 0.37	0.12	Significant

Model summary: $R^2 = 0.46$; adjusted $R^2 = 0.44$; $Q^2 = 0.29$

The model explained 46 percent of the variance in academic writing integrity. This indicated that AI-assisted writing practices made a substantial contribution to differences in learners' integrity, although other influences outside the model also affected their behavior. Such influences could include teacher expectations, assignment design, peer practices, knowledge of citation, access to school guidance, and personal attitudes toward honesty.

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Information verification emerged as the strongest positive predictor of academic writing integrity, with a path coefficient of 0.31 and an effect size of 0.15. Learners who checked AI-generated claims against dependable sources were more likely to preserve accuracy, acknowledge evidence, and accept responsibility for their written outputs. Verification required learners to pause, compare information, and decide whether generated material was suitable for inclusion. This process kept the learner actively involved in the writing task rather than allowing the AI tool to determine the final content.

Disclosure of AI assistance was the second strongest positive predictor, with a path coefficient of 0.27. Learners who honestly indicated how AI was used also reported stronger academic writing integrity. Disclosure did not remove the learner's responsibility for the work. Instead, it made the writing process more transparent and allowed teachers to judge whether the assistance remained within the permitted limits of the task. Yusuf et al. (2024) found that responsible AI use could support learning, but ethical guidelines and culturally responsive institutional policies were needed to address academic dishonesty concerns. The present result supported the need for a clear disclosure practice at the school level.

Revision and feedback use had a smaller but significant positive effect on academic writing integrity. The path coefficient of 0.16 suggested that learners who used AI suggestions to examine and improve their own drafts were more likely to retain responsibility for the writing process. Revision required an existing learner-produced text, followed by judgment about which suggestions should be accepted, changed, or rejected. Kim et al. (2026) found that students with stronger AI literacy interacted with AI in more deliberate ways, including planning, evaluating feedback, and integrating suggestions rather than relying on one-step text generation. This form of interaction supported the view of AI as a writing aid rather than an unacknowledged substitute for learner effort.

Drafting support produced a significant negative effect on academic writing integrity, with a path coefficient of -0.23. As reliance on AI-generated sentences, paragraphs, or complete sections increased, academic writing integrity decreased. This was the clearest problem identified by the structural model. Learners who allowed AI to carry a greater share of the drafting task were less likely to preserve original authorship, acknowledge assistance, and ensure that submitted work reflected their actual ability. The result did not suggest that every use of AI during drafting represented misconduct. It showed that extensive dependence on generated text increased the likelihood of weakened ownership and reduced integrity.

This finding agreed with Chan's (2025) observation that students clearly disapproved of complete AI generation but were less certain about subtler forms of AI-assisted writing. Learners may recognize that submitting an entirely generated essay is improper while still accepting AI-produced paragraphs or paraphrased sections without considering their effect on authorship. The negative path found in the present study showed that academic integrity instruction must address these less obvious practices rather than focus only on fully generated compositions. Idea generation and planning did not significantly predict academic writing integrity. This meant that asking AI for possible topics, questions, examples, or organizational suggestions was not independently associated with higher or lower integrity after the other dimensions were considered. The educational meaning of idea generation depended on what the learner did after receiving the response. A learner could use an AI suggestion as a starting point and still develop an original argument, or the learner could accept the suggested structure without reflection. Language refinement also had no significant independent effect. Grammar checking, vocabulary suggestions, and sentence correction were not sufficient to explain differences in academic writing integrity. Such practices may be acceptable when they improve a learner's existing work, but they may become problematic when extensive rewriting hides the learner's actual language ability. The nonsignificant result indicated that the ethical quality of language assistance depended more on learner control, task rules, and disclosure than on the mere use of the feature.

The results were consistent with the broader observation that AI use should not be judged through a simple permitted or prohibited classification. Torres-Diaz et al. (2025) reported that knowledge of AI tools and ethical awareness were connected with lower plagiarism levels, while uncritical trust in generated information was associated with higher plagiarism. This supported the present finding that verification and transparent use mattered more than access to AI alone.

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Table 5. *Out-of-Sample Predictive Performance*

Academic Writing Integrity Dimension	Q^2predict	PLS-SEM RMSE	Linear Model RMSE	PLS-SEM MAE	Linear Model MAE	Predictive Result
Original authorship	0.21	0.63	0.66	0.49	0.51	Moderate
Source acknowledgment	0.18	0.67	0.69	0.52	0.54	Moderate
Truthfulness in presenting work	0.27	0.58	0.61	0.44	0.47	Moderate
Information accuracy	0.24	0.61	0.64	0.47	0.49	Moderate
Responsible use of generated content	0.29	0.57	0.61	0.43	0.46	Moderate
Accountability for submitted work	0.16	0.65	0.66	0.50	0.49	Low to moderate

All Q^2predict values were above zero, ranging from 0.16 to 0.29. The PLS-SEM model produced lower root mean square errors than the linear benchmark model for all six dimensions. It also produced lower mean absolute errors for five of the six dimensions. These results indicated moderate out-of-sample predictive power.

The highest predictive relevance was recorded for responsible use of generated content, followed by truthfulness and information accuracy. The model was therefore more capable of predicting integrity behaviors that were directly connected with how learners evaluated and handled AI-generated material. Its predictive performance was weaker for accountability because accountability could also be shaped by personal values, teacher monitoring, family expectations, and previous experiences with school rules.

The predictive findings strengthened the practical value of the model. The significant structural paths were not limited to the existing dataset. They showed reasonable capacity to estimate integrity outcomes when applied to other learners with similar characteristics. The model could therefore guide school-based interventions, although it should not be used to label or discipline individual learners.

Table 6. *Importance-Performance Map for AI-Assisted Writing Practices*

AI-Assisted Writing Practice	Importance	Performance	Priority Interpretation
Information verification	0.31	49.00	Primary area for improvement
Disclosure of AI assistance	0.27	43.25	Primary area for improvement
Drafting support	-0.23	72.25	High-risk dependence requiring control
Revision and feedback use	0.16	65.25	Practice to strengthen
Idea generation and planning	0.06	68.00	Lower priority
Language refinement	0.04	75.75	Lower priority

Information verification had the highest importance but only moderate performance. This made it the first priority for instructional action. Learners needed structured opportunities to compare AI-generated claims with textbooks, scholarly materials, official publications, and other reliable sources. Verification should be built into writing tasks through source-checking logs, claim-evidence tables, annotated drafts, and short explanations of why generated information was accepted or rejected.

Disclosure of AI assistance had the second highest importance and the lowest performance. This finding showed that learners were not consistently reporting how AI contributed to their written work. The school could address this problem through a simple AI-use declaration attached to academic writing tasks. The declaration could ask learners to identify the tool used, describe the assistance obtained, state which parts were independently written, and explain how the generated content was checked. Chan (2025) argued that the changing boundaries of AI-related misconduct require clearer guidance and greater transparency because students often understand direct copying but remain uncertain about less obvious forms of AI involvement.

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Drafting support showed high performance but had a negative effect on academic writing integrity. This combination identified it as the most immediate risk. The result did not support a complete ban on AI-assisted drafting. It indicated that teachers needed to reduce unmonitored dependence on generated sentences and paragraphs. Requiring handwritten planning notes, saved draft stages, oral explanation of arguments, source annotations, and classroom-based writing samples could help teachers determine whether the final composition reflected the learner's own thinking.

Revision and feedback use had a positive effect and a moderately high performance level. It could be strengthened as a safer alternative to direct text generation. Teachers could allow learners to submit their own initial drafts before using AI for feedback. Learners could then prepare a revision record showing the original sentence, the AI suggestion, the final revision, and the reason for accepting or rejecting the recommendation. This approach would preserve learner judgment and make the revision process visible.

The findings also supported the need for school-level rather than teacher-by-teacher guidance. Alfarwan's (2025) systematic review found that empirical work on generative AI in K to 12 education remained limited and that schools needed evidence-based policies, teacher preparation, and support systems for responsible classroom use. A shared policy at San Mariano National High School could reduce confusion caused by different expectations across learning areas.

CONCLUSION

The secondary learners used artificial intelligence frequently for language refinement, drafting support, idea generation, and revision, but their academic writing integrity remained only moderate because information verification, disclosure of AI assistance, original authorship, and source acknowledgment were not consistently practiced. Information verification and disclosure of AI use positively predicted academic writing integrity, while heavy reliance on AI-generated drafts negatively affected learners' ownership and responsible authorship. Revision and feedback use also contributed positively when learners remained actively involved in evaluating and improving their own work. Based on these findings, San Mariano National High School should develop clear and consistent guidelines that define acceptable, limited, and prohibited uses of AI in academic writing. Teachers should require learners to submit planning notes, initial drafts, source-checking records, revision logs, and AI-use disclosure statements to make the writing process visible. Classroom instruction should also strengthen learners' skills in fact-checking, citation, paraphrasing, source acknowledgment, and evaluation of generated content. AI should be used primarily to support feedback and revision rather than to produce complete sentences, paragraphs, or compositions for submission. Regular orientation for teachers, learners, and parents should also be conducted to promote responsible AI use while protecting learner authorship, independent thinking, and honesty in academic writing.

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