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Academic Writing in the Age of Artificial Intelligence: A Study on Efficiency and Authenticity in Higher Education

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Abstract
This study explored the role of artificial intelligence (AI) in enhancing academic writing efficiency and authenticity among tertiary-level students. A total of 228 students, primarily first-year undergraduates aged 18–20, participated in a survey that measured perceptions across six dimensions: authenticity, originality, efficiency, technical challenges, ethical concerns, and institutional policy. Results revealed that students frequently used AI tools such as ChatGPT, Grammarly, and Turnitin to support various stages of writing. Findings showed that students perceive AI positively in maintaining authenticity and originality, with many emphasizing its role as a supportive guide rather than a replacement for their academic voice. Similarly, AI was reported to improve efficiency by helping students overcome writer's block, reduce editing time, and enhance overall productivity. Despite these benefits, respondents acknowledged technical limitations, including restricted access to advanced features and occasional inaccuracies. Ethical awareness was evident, as students expressed caution against plagiarism and misuse of AI, underscoring the need for responsible use. However, uncertainty regarding institutional policies on AI usage highlighted a gap in guidance and governance. Overall, the study concludes that AI tools are viewed as beneficial aids that enhance academic writing when used responsibly, but institutional clarity and training are essential to ensure ethical integration in higher education.

Keywords: Artificial Intelligence, Academic Writing, Authenticity, Originality, Efficiency, Ethical Concerns, Technical Challenges, Institutional Policy, Tertiary Students

Introduction

Artificial intelligence (AI) applications have become an essential component of daily life, reflecting the growing significance of technological advancement (Angheluta *et al*., 2021). As AI continues to develop rapidly, its applications across multiple domains, particularly in education, have expanded significantly. AI is a dynamic field that evolves to enhance human capabilities in various aspects of life (Talaat, 2020). In education, the integration of AI has reshaped traditional teaching and learning by introducing new possibilities and challenges. Learning outcomes, classroom environments, and student learning processes are increasingly influenced by AI, resulting in more adaptive and efficient educational experiences. For instance, AI supports personalized learning, enabling greater opportunities for academic success (Adel, 2019).

The emergence of information technologies, such as virtual reality, intelligent tutoring systems, and online platforms, has further transformed the learning environment by providing learners with new opportunities to access educational resources. Students now benefit from virtual classes, adaptive learning systems, and digital tools that complement traditional instruction. However, these developments also bring challenges, such as determining how best to integrate AI while preserving essential aspects of conventional pedagogy. Accordingly, this study focuses on examining the effects and effectiveness of AI in students' learning, with particular attention to modes of learning and academic achievement.

Recent studies highlight both the benefits and limitations of AI tools in education. For instance, Farrokhnia *et al*. (2023) found that ChatGPT can improve access to information and support personalized learning but also poses challenges related to bias, lack of deep understanding, and threats to academic integrity. Similarly, Chaudhry *et al*. (2023) empirically tested ChatGPT's ability to solve assignments and evade plagiarism detection, urging higher education institutions to revisit academic practices to ensure integrity and continuous learning. The rapid development of large language models, including OpenAI's GPT-3,

GPT-4, and ChatGPT, has expanded AI's accessibility and capabilities in natural language processing, content generation, and sentiment analysis (Brown *et al*., 2020; Lund *et al*., 2023; Dwivedi *et al*., 2023; Radford *et al*., 2023).

Despite these advancements, concerns about inclusivity and infrastructure persist. Mannuru *et al*. (2023) stressed the importance of adequate support systems to ensure AI contributes to inclusive development, while Abbass (2019) [1] argued that integrating AI into society requires active human participation in decision-making. Similarly, Cotton *et al*. (2023) emphasized the challenges of detecting academic dishonesty, urging universities to adopt responsible policies for AI use. Relatedly, Aitchison and McNeill (2019) [2] warned that overreliance on AI could blur distinctions between writers and raise doubts about the validity of student work. Gayed *et al*. (2022) [9] also noted that although much research exists on Automated Writing Evaluation (AWE) and earlier tools such as grammar and spell checkers, fewer studies have examined AI tools as learning instruments beyond assessment. Beyond academic contexts, broader societal risks include privacy invasion, manipulation of public opinion, and the widening of socio-economic disparities due to unequal access to AI (Caliskan *et al*., 2017; Dwivedi *et al*., 2023).

Students themselves are increasingly engaging with AI. Yuan *et al*. (2022) observed that learners commonly access AI tools via free platforms such as WhatsApp, Google, and Microsoft Edge, prompting questions about how students perceive AI's role in academic writing. Lee and Ryu (2021) [12] cautioned that careless use of AI in writing assignments may hinder the development of research, writing, and analytical thinking skills. In line with this, several studies (Agrawal *et al*., 2019; Autor, 2015; Chui *et al*., 2018; Dwivedi *et al*., 2021) pointed out that AI's rapid evolution has fueled widespread adoption across sectors, from automating routine tasks to enhancing productivity and enabling new forms of human-computer collaboration.

From an academic writing perspective, scholars have stressed the importance of understanding student and researcher perceptions of AI tools. Chen (2023) [6] argued that perceptions are crucial for navigating ethical and educational implications, while Binns (2023) [3] highlighted AI's role in reshaping writing practices through real-time feedback, suggestions, and text generation. Complementary studies (e.g., Jin *et al*., 2022) demonstrated that student engagement in peer feedback strongly predicts writing performance, underscoring that AI should complement—not replace—human learning processes. Similarly, Niemann (2022) [13] and Hu (2023) [10] reported that AI writing tools, including grammar checkers, plagiarism detection, and content generators, have substantially altered academic writing practices. Yet, as Arntz *et al*. (2016) and O'Neil (2017) argued, these transformations raise concerns such as job displacement, algorithmic bias, and overdependence on technology.

Beyond writing, AI has broader implications for teaching and learning. AI algorithms and educational robots now support learning management systems, training, and instructional activities (Costa *et al*., 2017; García *et al*., 2007). These developments are consistent with earlier findings (Brynjolfsson & McAfee, 2014; Jordan & Mitchell, 2015; Shollo *et al*., 2022) that advances in machine learning, big data, and deep learning allow machines to perform complex tasks such as image recognition, decision-making, and natural language processing. As Liu and Zeng (2021) noted, the integration of AI with big data has the potential to exceed human capabilities in certain domains, raising both opportunities and concerns for education and society at large.

Research Objectives

This study explored the effectiveness and implications of using artificial intelligence to improve academic writing efficiency and authenticity among students.

Specifically, the research seeks to:

Specific Objectives:

1. Identify the AI tools that the students used in academic writing;
2. Examine the perceived effect of AI in academic writing among students in terms of:
   2.1 Authenticity;
   2.2 Originality; and
   2.3 Academic writing efficiency.
3. Identify students' attitudes regarding using AI tools in academic writing in terms of:
   3.1 Technical limitations;
   3.2 Ethical Concerns; and
   3.3 Institutional Policy

Methodology

The study employed a quantitative research design, specifically a descriptive method, to examine the impact of artificial intelligence on students' academic writing efficiency and authenticity. Data will be collected through a survey questionnaire administered via Google Forms, validated by professors, and distributed to selected participants.

The respondents are 225 students from the College of Arts and Sciences (CAS) at Nueva Ecija University of Science and Technology, General Tinio Campus, representing BS Chemistry, BS Environmental Science, BS Psychology, BS Biology, and BS Food Technology programs. The sample was determined using Raosoft and selected through stratified random sampling from a total population of 536 students.

The research site is NEUST, chosen for its strong integration of science, technology, and access to AI-powered writing tools. The instrument consists of demographic items and Likert-scale questions on AI use, efficiency, and authenticity.

Data collection involves administering the survey online and in person, ensuring participants' understanding and honest responses.

Data analysis will use descriptive statistics to summarize responses. This approach provides a comprehensive view of students' perspectives while maintaining objectivity through numerical data.

Results and Discussion

AI tools that Students Used in Academic Writing

Table 1: Commonly Used AI Tools

AI Tool	Frequency (f)	Percentage (%)
ChatGPT(OPenAI)	214	92.2%
Grammarly	209	90.1%
Turnitin	155	66.8%
EndNote	140	60.3%
Zotero/Mendeley	139	59.9%
Copyscape	128	55.2%
Tableu	125	53.9%
Dedoose	109	47.0%
Provails Research	108	46.6%
MaxQDA	107	46.1%
Quirkos	100	43.1%
ArXiv/Semantic	99	42.7%
NVivo	98	42.2%
ATLAS.ti	98	42.2%
Leximancer	95	40.9%
RapidMiner	92	39.7%

The results in Table 1 reveal that tertiary students widely employ a range of artificial intelligence (AI) tools to support their academic writing tasks. ChatGPT (OpenAI) emerged as the most frequently used tool, with 92.2% of respondents reporting its use, reflecting its growing popularity as a versatile platform for idea generation, drafting, and refining written outputs. Grammarly followed closely at 90.1%, indicating that students highly value AI-driven grammar and style assistance to enhance clarity and correctness in their academic work. Turnitin ranked third (66.8%), underscoring students' strong concern for maintaining originality and avoiding plagiarism.

Meanwhile, citation and reference management tools such as EndNote (60.3%) and Zotero/Mendeley (59.9%) were also widely utilized, highlighting students' recognition of the importance of proper referencing and academic integrity. Copyscape (55.2%) further supports this trend, as it allows for plagiarism detection and ensures originality. Beyond writing-specific tools, students also reported using platforms for data analysis and qualitative research, such as Tableau (53.9%), Dedoose (47.0%), MaxQDA (46.1%), NVivo (42.2%), and ATLAS.ti (42.2%). These choices suggest that many students extend their use of AI beyond writing mechanics to include research organization, coding, and data visualization.

The findings suggest that students employ a multifunctional approach to AI integration in academic writing, where tools are not limited to text correction but span plagiarism detection, citation management, and research data analysis. The strong preference for ChatGPT and Grammarly reflects a reliance on AI for immediate, user-friendly assistance in producing coherent and polished texts, while the use of specialized software points to the growing recognition of AI's role in supporting higher-level research processes. This demonstrates that tertiary students are not only consumers of AI but are also developing adaptive strategies in tool selection to address various dimensions of academic writing—from drafting to final submission.

The Perceived Effect of AI in Academic Writing Authenticity

Table 2: Perceived Effect of AI in Academic Writing in Terms of Authenticity

S. No	Statement	Mean	Interpretation
1	AI helps maintain a personal writing voice.	3.80	Very High
2	Written outputs remain genuine when AI tools are used.	3.50	Very High
3	AI supports and enhances original thoughts.	3.60	Very High
4	Personal ideas are clearly reflected when using AI.	3.70	Very High
5	AI encourages improvement of original content.	3.60	Very High
6	AI serves as a guide rather than a complete writing solution.	3.60	Very High
7	AI tools help express authentic opinions more clearly.	3.40	High
8	AI-generated content is revised to align with personal writing style.	3.70	Very High
9	Instructors can still recognize a unique writing tone when AI is used.	3.50	Very High
10	AI contributes to strengthening academic voice.	3.70	Very High
	Weighted Mean	**3.61**	**Very High**

The results in Table 2 indicate that respondents perceive AI as highly supportive in maintaining authenticity in academic writing, with a weighted mean of 3.61 interpreted as Very High. The highest-rated item, "AI helps maintain a personal writing voice" (3.8, Very High), shows that students recognize the ability of AI to assist in writing without overshadowing their individuality. Closely related items such as "Personal ideas are clearly reflected when using AI" (3.7, Very High), "AI-generated content is revised to align with personal writing style" (3.7, Very High), and "AI contributes to strengthening academic voice" (3.7, Very High) further emphasize the perception that AI tools act as enablers rather than replacements of genuine student expression.

Although most items were rated Very High, the statement "AI tools help express authentic opinions more clearly" received the lowest mean score (3.4, High). This suggests that while AI is effective in refining structure and clarity, some respondents believe it does not always fully capture the personal nuances of their authentic perspectives.

The findings highlight that students view AI as a guide that complements human creativity rather than as a substitute for authentic work. Its responsible use is associated with maintaining a personal voice, enhancing original ideas, and strengthening academic integrity, thereby reinforcing the belief that authenticity can be preserved even when AI tools are integrated into the writing process.

Originality

Table 3: Perceived Effect of AI in Academic Writing in Terms of Originality

S. No	Statement	Mean	Interpretation
1	AI tools help generate unique content ideas.	3.50	Very High
2	AI suggestions are rephrased to produce original text.	3.70	Very High
3	Plagiarism checks are conducted even after using AI tools.	3.40	High
4	The use of AI encourages creative thinking in writing.	3.60	Very High
5	Personal experiences are added to ensure originality.	3.50	Very High
6	Caution is observed to avoid over-reliance on AI content.	3.10	High
7	AI tools help prevent redundancy in writing.	3.30	High
8	AI output is modified to reflect new or rare insights.	3.60	Very High
9	Work produced with AI support remains original.	3.40	High
10	Responsible use of AI helps avoid producing generic work.	3.80	Very High
Weighted Mean		**3.49**	**Very High**

The results in Table 3 show that respondents generally perceive AI as a tool that positively contributes to originality in academic writing, as indicated by the weighted mean of 3.49, interpreted as Very High. The highest-rated statement, "Responsible use of AI helps avoid producing generic work" (3.8, Very High), highlights the strong belief that proper use of AI enhances authenticity and distinctiveness in student outputs. Similarly, items such as "AI suggestions are rephrased to produce original text" (3.7, Very High) and "The use of AI encourages creative thinking in writing" (3.6, Very High) emphasize that AI serves as a supportive tool that stimulates originality and innovation rather than diminishing it.

On the other hand, relatively lower ratings were observed in "Caution is observed to avoid over-reliance on AI content" (3.1, High), "AI tools help prevent redundancy in writing" (3.3, High), and "Work produced with AI support remains original" (3.4, High). These results suggest that while respondents acknowledge AI's potential to encourage originality, there remains a degree of caution regarding its limitations, particularly in ensuring truly unique output and avoiding excessive dependence on the technology.

Overall, the findings indicate that students strongly value AI as a partner in promoting originality, if it is used responsibly and complemented by personal input such as reflections and experiences. This shows that originality is not compromised but rather supported when AI tools are integrated mindfully into the writing process.

Academic Writing Efficiency

Table 4: Perceived Effect of AI in Academic Writing in Terms of Academic Writing Efficiency

S. No	Statement	Mean Score	Interpretation
1	AI helps complete writing tasks faster.	3.50	Very High
2	AI is useful in organizing ideas effectively.	3.40	High
3	AI tools reduce the time spent on grammar checks.	3.50	Very High
4	AI provides support in overcoming writer's block.	3.50	Very High
5	AI enhances the overall flow of writing.	3.40	High
6	AI generates drafts quickly for writing tasks.	3.30	High
7	Productivity increases with the use of AI tools.	3.30	High
8	AI supports meeting deadlines efficiently.	3.60	Very High
9	AI improves coherence and transitions in writing.	3.60	Very High
10	AI contributes to the improvement of academic writing skills.	3.70	Very High
Weighted Mean		**3.48**	**Very High**

The results in Table 4 reveal that respondents perceive AI as highly effective in improving academic writing efficiency, with a weighted mean of 3.48, interpreted as Very High. The highest-rated item, "AI contributes to the improvement of academic writing skills" (3.7, Very High), reflects strong recognition of AI's role in enhancing overall writing competence. Similarly, statements such as "AI supports meeting deadlines efficiently" (3.6, Very High) and "AI improves coherence and transitions in writing" (3.6, Very High) highlight AI's value in streamlining the writing process and ensuring clarity and organization.

Meanwhile, items such as "AI generates drafts quickly for writing tasks" (3.3, High) and "Productivity increases with the use of AI tools" (3.3, High) received slightly lower ratings, though still positive. These results suggest that while AI is recognized as a supportive tool, students may not yet fully maximize its potential to increase productivity and speed in drafting. Likewise, "AI is useful in organizing ideas effectively" (3.4, High) and "AI enhances the overall flow of writing" (3.4, High) indicate that although AI helps in structuring and improving flow, some respondents remain cautious about fully depending on it for these aspects.

Overall, the findings show that AI tools are perceived as valuable aids in increasing efficiency, reducing time spent on mechanical aspects of writing, and improving academic outputs. The very high weighted mean affirms that students believe AI strengthens their writing efficiency, particularly

in meeting deadlines and producing coherent, skillful work, while still recognizing areas where human effort remains essential.

Students' Attitudes in Using AI Tools in Academic Writing

Technical Limitations

Table 5: Students' Attitudes in Using AI Tools in Terms of Technical Limitations

S. No	Statement	Mean Score	Interpretation
1	Internet connectivity affects the effective use of AI tools.	3.50	Extremely Positive
2	Accessibility and user- friendliness vary among AI tools.	3.70	Extremely Positive
3	Understanding certain AI features can be challenging.	3.60	Extremely Positive
4	Some AI-generated content lacks sufficient context or accuracy.	3.70	Extremely Positive
5	AI tools may occasionally misinterpret user input.	3.50	Extremely Positive
6	Free AI tools provide limited features compared to paid versions.	3.70	Extremely Positive
7	Human feedback remains more valuable than AI-generated corrections.	3.60	Extremely Positive
8	Technical glitches affect the writing process when using AI.	3.70	Extremely Positive
9	AI tools sometimes provide outdated or less reliable information.	3.70	Extremely Positive
10	Multiple tools are often used to address AI limitations.	3.40	Positive
Weighted Mean		**3.61**	**Extremely Positive**

The results in Table 5 reveal that students generally hold an extremely positive attitude toward acknowledging and managing the technical limitations of AI tools, as reflected in the weighted mean of 3.61. Several statements received the highest mean of 3.7, including "Accessibility and user-friendliness vary among AI tools," "Some AI-generated content lacks sufficient context or accuracy," "Free AI tools provide limited features compared to paid versions," "Technical glitches affect the writing process when using AI," and "AI tools sometimes provide outdated or less reliable information." These ratings suggest that students are highly aware of the practical challenges that accompany AI use, especially concerning content accuracy, tool reliability, and access to advanced features.

Other items, such as "Understanding certain AI features can be challenging" (3.6, Extremely Positive) and "Human feedback remains more valuable than AI-generated corrections" (3.6, Extremely Positive), further indicate that students value their own learning process and recognize the importance of human input despite the advantages of AI. Meanwhile, the lowest-rated item, "Multiple tools are often used to address AI limitations" (3.4, Positive), reflects that while some students resort to combining different tools, not all may find this strategy necessary or efficient.

Overall, the findings show that students demonstrate a highly positive awareness of AI's technical limitations, recognizing both its strengths and shortcomings. Their responses imply a balanced and responsible attitude, as they acknowledge the importance of supplementing AI use with personal judgment, human feedback, and cautious evaluation of outputs to ensure the reliability and effectiveness of academic writing.

Ethical Concerns

Table 6: Students' Attitudes in Using AI Tools in Terms of Ethical Concerns

S. No	Statement	Mean Score	Interpretation
1	Ethical standards guide the use of AI in writing.	3.30	Positive
2	Crediting AI contributions reflects honesty in academic work.	3.60	Extremely Positive
3	Responsible use of AI supports the prevention of academic dishonesty.	3.70	Extremely Positive
4	AI tools serve as helpful aids that enhance, not replace, student work.	3.50	Extremely Positive
5	Students uphold integrity by producing original work alongside AI support.	3.70	Extremely Positive
6	AI tools can promote proper academic practices when used responsibly.	3.60	Extremely Positive
7	Education on responsible AI use strengthens ethical awareness among students.	3.70	Extremely Positive
8	Using AI responsibly builds confidence in completing major writing tasks.	3.50	Extremely Positive
9	Transparency in acknowledging AI use promotes fairness in schoolwork.	3.60	Extremely Positive
10	Reflecting on the ethical use of AI fosters integrity in academic activities.	3.70	Extremely Positive
	Weighted Mean	**3.59**	**Extremely Positive**

The results presented in Table 6 show the students' attitudes in using AI tools in terms of ethical concerns. The findings revealed that the students hold an extremely positive attitude toward the ethical use of AI, with a weighted mean of 3.59. The highest mean scores of 3.7 (Extremely Positive) were recorded in statements emphasizing the importance of responsible AI use in preventing academic dishonesty, upholding integrity by producing original work alongside AI support, strengthening ethical awareness through education on responsible AI use, and fostering integrity by reflecting on the ethical use of AI. These results indicate that students strongly recognize the role of ethics in maintaining academic honesty and integrity when integrating AI in their work.

Other statements with mean scores of 3.6 (Extremely Positive) highlighted students' belief that crediting AI contributions reflects honesty, that AI tools can promote proper academic practices when used responsibly, and that transparency in acknowledging AI use promotes fairness in schoolwork. Meanwhile, mean scores of 3.5 (Extremely Positive) reflected students' agreement that AI serves as a helpful aid that enhances but does not replace student work, and that responsible AI use builds confidence in completing major writing tasks. The lowest mean score of 3.3 (Positive) still indicated agreement, showing that students believe ethical standards are essential in guiding the use of AI in

writing.

Overall, the findings suggest that students demonstrate a strong awareness of the ethical considerations in using AI. They value honesty, fairness, and integrity, while acknowledging that AI is best used as a supportive tool rather than a substitute for student effort. This highlights the importance of continuous education on responsible AI practices to further reinforce ethical awareness among learners.

Institutional Policy

Table 7: Students' Attitudes in Using AI Tools in Terms of Institutional Policy

S. No	Statement	Mean Score	Interpretation
1	The institution provides clear policies on AI usage.	3.40	Aware
2	Professors discuss the use of AI in academic writing.	3.40	Aware
3	The school encourages the responsible use of AI tools.	3.30	Aware
4	Institutional guidelines on AI usage are consistently followed.	3.40	Aware
5	The use of AI tools in schoolwork is clearly allowed and guided.	3.40	Slightly Aware
6	Clear institutional policies help guide appropriate use of AI.	3.50	Very Aware
7	The school provides training on the effective use of AI writing tools.	3.70	Very Aware
8	Institutional policies on AI usage are respected and observed.	3.50	Very Aware
9	Institutional guidelines help prevent the misuse of AI tools.	3.60	Very Aware
10	Policies strengthen academic integrity in the use of AI.	3.70	Very Aware
	Weighted Mean	**3.49**	**Very Aware**

Table 7 presents the students' attitudes in using AI tools in terms of institutional policy. The results show a weighted mean of 3.49, verbally interpreted as Very Aware. This indicates that students are generally very aware of the institutional policies that guide the responsible use of AI tools in academic tasks.

Among the indicators, the highest mean scores were obtained from the statements, "The school provides training on the effective use of AI writing tools" (3.7) and "Policies strengthen academic integrity in the use of AI" (3.7), both interpreted as Very Aware. This suggests that students recognize the institution's efforts to integrate AI responsibly into academic work by providing training and ensuring integrity.

Similarly, students are very aware that institutional guidelines help prevent misuse of AI tools (3.6), that policies are respected and observed (3.5), and that clear institutional policies guide appropriate use of AI (3.5). These findings reflect a strong awareness of the role of policies in maintaining proper use and accountability in AI-assisted writing.

On the other hand, the lowest mean score was recorded in the statement, "The school encourages the responsible use of AI tools" (3.3), though still interpreted as Aware. This implies that while students acknowledge encouragement from the school, there is still room for improvement in reinforcing and promoting consistent advocacy of responsible AI use.

Overall, the findings suggest that students are well-informed about institutional policies on AI usage, with particular strength in training, guidance, and integrity measures. However, further emphasis may be needed to ensure that all students clearly understand the extent to which AI is allowed and guided in their academic work.

Conclusions

The findings indicate that most of the students agreed that the use of AI enhances the authenticity, originality, and writing effectiveness. They believe that AI tools assist in clearly expressing their thoughts, creating original content, and preserving their academic voice. Students were also able to reflect on ethical considerations with many agreeing to use AI as a guide and not a replacement. However, a large proportion did feel uncertain about institutional policy regarding the use of AI. There is still a strong desire on the part of students to obey rules if only rules are precisely articulated. At last the findings confirm that AI tends to have overall a beneficial effect on students' writing educationally, but emphasize the significance of proper orientation and policy on the part of schools to guide ethical and effective use.

Recommendations

In light of the findings, it is recommended that higher education institutions develop clear and comprehensive policies on the ethical use of AI tools in academic writing. These policies should articulate permissible practices and boundaries to prevent misuse while fostering responsible integration of AI into students' learning. Moreover, faculty training and orientation programs should be conducted to ensure both teachers and students are well-informed about AI's role as a supportive learning instrument rather than a replacement for critical thinking and originality. Incorporating awareness sessions on digital ethics and academic integrity will further help students maintain authenticity in their work while leveraging AI technologies. Finally, schools should consider providing equitable access to AI tools to prevent socio-economic disparities among learners, ensuring that the benefits of AI are maximized across diverse student populations.

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