Enhancing or Undermining? Evaluating the Impact of AI Writing Tools on Student Skills Development in Rural High Schools

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Abstract

This study evaluates the impact of AI writing tools on writing skills development among high school students in a rural setting. By examining improvements in grammar, structure, and argumentation over a four-week intervention in a freshman English class, the research aims to identify both the enhancements and limitations of these tools. Findings from the teacher observations, group surveys, and teacher reflections indicate that while AI tools streamline writing tasks and reduce anxiety, they do not significantly advance deeper writing skills, raising concerns about fostering an overreliance on technology. Challenges include technological barriers, ethical issues, and a lack of tool familiarity. The study advocates for a balanced approach to integrating AI in educational practices, emphasizing the need for strategic curriculum development, comprehensive teacher training, and clear usage guidelines. This research contributes to the discourse on leveraging technology to enhance educational outcomes in rural areas effectively and ethically.

Keywords: AI writing tools, rural education, digital literacy, AI in education

Introduction

The integration of Artificial Intelligence (AI) into educational settings has the potential to address disparities in academic achievement, particularly among marginalized populations. By leveraging AI, educators can provide personalized learning experiences tailored to the unique needs of each student, which can be especially beneficial in underserved areas where resources are limited. AI tools can also assist in identifying learning gaps and provide targeted interventions to help students who may be falling behind. Furthermore, the use of AI in education can facilitate access to high-quality educational content and support, bridging the gap between different socioeconomic groups. This research project is designed to investigate the

effectiveness of AI tools in enhancing writing skills among high school students in a remote, rural area of Nebraska, USA. While AI holds significant promise for educational innovation, there remains a paucity of focused research on how these technologies can be leveraged to foster educational equity through practical classroom applications. Our study aims to address this gap by deploying AI-driven tools such as Grammarly, ChatGPT, ProWritingAid, and Hemingway within the English Language Arts curriculum to improve student writing. Specifically, the project examines the impact of AI on key aspects of writing, including grammar accuracy, structural organization, thesis statement development, and the use of evidence in argumentation.

The effectiveness of these AI tools will be evaluated through a combination of teacher observations, student surveys, and teacher's reflection, aiming to generate empirical data on their impact. By documenting these outcomes, the study seeks to provide valuable insights into the practical integration of AI in educational practices, with a particular focus on enhancing learning outcomes for students with socio-economic disparities. Ultimately, this research contributes to the broader dialogue on educational equity, proposing evidence-based strategies that utilize advanced technologies to address the diverse needs of contemporary students. This attempt not only enriches our understanding of AI's role in education but also offers a model for other regions facing similar challenges in educational disparity.

Introduction to AI in Educational Settings

The use of AI in educational contexts has progressively expanded. These AI applications are particularly valued for their ability to personalize learning experiences and provide targeted, individualized support to students, which has been shown to enhance student engagement and academic performance across a range of disciplines (Lo, 2023; Mishra et al., 2023). For instance, AI-driven platforms can adapt to the learning pace and style of each student, thereby offering a more tailored educational experience that is often lacking in traditional classroom settings (Thimmanna et al., 2024).

Despite the noted advancements in AI tools for educational purposes, empirical research focusing on their specific impact in rural high school settings is still relatively limited. While the initial findings, such as those from pilot studies by Crompton et al. (2024), indicate that AI tools can significantly enhance student learning skills, their effectiveness appears to be influenced by a myriad of contextual factors. Key among these factors is the availability of robust technology infrastructure, which is often lacking in rural areas. Without reliable internet access and modern computing facilities, the implementation and functionality of AI tools can be severely compromised, thereby affecting their potential benefits in these environments (Crompton et al., 2024; Aytac, 2024). Furthermore, the effectiveness of AI tools is heavily dependent on the level of teacher training and readiness. Teachers must not only be equipped with the necessary technological skills but also need pedagogical knowledge on how to integrate these tools effectively into their teaching practices. Studies (Lancaster, 2023; Lo, 2023, Mishra et al., 2023) have shown that when teachers are properly trained to use AI tools, the impact on student outcomes is markedly positive. Conversely, a lack of adequate training can result in underutilization of these technologies, failing to harness their full potential. The integration of AI tools into the curriculum also plays a critical role in their effectiveness. Effective integration

involves aligning AI tools with the curriculum goals and teaching methods that complement traditional educational approaches. This ensures that AI tools serve as a support mechanism rather than a replacement, enhancing the learning experience rather than overshadowing traditional pedagogical methods. Research by Wu and Yu (2024) highlights that AI tools are most effective when they are used to augment existing teaching strategies, providing additional support and enrichment rather than acting as standalone solutions Moreover, the sociocultural context of rural schools can also influence the effectiveness of AI tools. Factors such as community perceptions of technology, the value placed on education, and the general level of engagement with digital tools can either facilitate or hinder the acceptance and utilization of AI in educational settings. Studies by Southworth et al. (2023) suggest that in communities where technology is viewed positively and its educational benefits are well understood, the integration of AI tools is generally more successful.

In sum, while the potential of AI in education is widely acknowledged, its role in addressing the specific challenges of rural education, especially in enhancing writing skills, calls for a more focused and contextualized research agenda. This would not only contribute to a more equitable educational landscape but also ensure that the benefits of AI in education are accessible across diverse geographical and socio-economic settings.

Effectiveness of AI Tools in Enhancing Writing Skills

The effectiveness of AI tools in enhancing writing skills has been substantiated by numerous studies, underscoring the transformative impact these technologies can have on educational outcomes. Tools such as Grammarly and other recent AI-driven platforms are particularly noted for their ability to refine grammar, punctuation, and style, significantly enhancing the overall quality of student writing. Research conducted by Bennett et al. (2022) has demonstrated that the real-time feedback provided by these platforms helps students identify and correct errors instantly, which fosters a more active learning process and leads to better retention of writing rules. Moreover, AI platforms extend beyond basic grammar and style corrections. Recent tools like ChatGPT have been effectively utilized to improve higher-order thinking skills, such as argumentation and critical analysis. Tabib et al. (2024) highlights how interactive writing sessions with ChatGPT stimulate students to formulate and refine their arguments, enhancing their critical thinking abilities in the process. This interactive approach not only improves written expression but also encourages deeper engagement with the content. In addition to these capabilities, AI tools are also instrumental in personalizing learning experiences in writing. ProWritingAid, for instance, offers detailed reports on writing style, word choice, and readability, which allows students to understand their unique writing habits and areas for improvement (Zebua & Katemba, 2024). Such personalized feedback is crucial in helping students develop a distinct and effective writing voice, which is often challenging to achieve through traditional teaching methods alone.

The use of AI in writing also extends to its inclusivity and adaptability, making it suitable for diverse learning environments and educational needs. Many studies (Wu, 2024; Tabib & Alrabeei, 2024) have shown that non-native English speakers benefit greatly from consistent interaction with AI writing aids, which support their language acquisition and integration into

mainstream education systems. These tools provide a supportive, on-demand resource that can be particularly empowering for ESL students, who may require more time and specialized support to master academic writing standards. Furthermore, AI-driven writing tools are not just enhancing individual skills but also revolutionizing how writing is taught and assessed in classrooms. According to Javaid et al. (2023), the integration of AI tools in educational settings promotes a more dynamic and responsive teaching environment. Teachers can leverage AI analytics to better understand class performance trends and individual student progress, enabling more informed instructional decisions that target specific student needs.

In conclusion, while the potential of AI tools to enhance writing skills in rural high school settings is significant, their effectiveness is contingent upon a complex interplay of technological, pedagogical, and sociocultural factors. This study aims to address these challenges by deploying AI-driven tools such as Grammarly, ChatGPT, ProWritingAid, and Hemingway within the English Language Arts curriculum. By focusing on improving key aspects of writing, including grammar accuracy, structural organization, thesis statement development, and the use of evidence in argumentation, the project seeks to provide a comprehensive understanding of how these tools can be effectively integrated into rural educational settings. The goal is to enhance students' writing skills and academic performance, offering evidence-based practices that leverage technology to meet the diverse needs of students in rural high schools.

Classroom Context

The teacher conducted this research project under the supervision of a college faculty member who served as her research mentor in a graduate- level class. She also agreed to allow the mentor to use the data for academic publication. She taught a freshman class of 20 students at a small rural high school in western Nebraska. Of these students, 44% qualify for either free or reduced-price lunch. The class is predominantly White, making up 82.4% of the population, while 17.6% are Hispanic/Latino students whose native language is Spanish. The gender distribution is nearly balanced, with 51% male and 49% female. Due to the small class size, further demographic details were not included. According to the teacher, these students typically excelled in small group interactions but often struggled to maintain focus on individual tasks. They faced difficulties with essential writing skills such as grammar, word choice, organization, thesis development, and the proper use and citation of textual evidence. Additionally, they often lacked a clear understanding of their audience and the purpose of their assignments. Due to the school's small size, the students were deeply involved in a variety of extracurricular activities, including Future Farmers of America (FFA), band, speech, quiz bowl, One Act, and various sports. This extensive involvement frequently led them to postpone their academic responsibilities. In addition, the limited time they devoted to homework sometimes resulted in tendencies towards plagiarism. Before starting this project, she had introduced an informative writing assignment, giving students a full class period to brainstorm topics with the aid of a writing sample she had prepared and a list of school- appropriate topics. Despite this support, the teacher observed that many students still felt overwhelmed and sat before blank screens, unsure of where to start. While some began exploring topics that interested them, others were paralyzed by the task at hand. The observed difficulty in starting to write, even with the provided writing sample and list of topics, affected nearly all students in the class, including White students. This widespread

issue suggests that the problem is not solely related to the cultural or educational backgrounds of English Language Learners (ELL). Instead, it indicates that the challenge may stem from other factors affecting all students, such as writing anxiety, lack of confidence, or unfamiliarity with the writing task. This experience led her to question whether it was a missed opportunity not to incorporate AI tools like ChatGPT for brainstorming. After exploring ideas with the research mentor, the teacher decided to integrate AI tools to help improve the educational experience for her students.

To maximize the benefits of AI tools in enhancing student writing, she taught her students how to use these tools appropriately. This included providing technical guidance on how to navigate AI interfaces and ethical guidance to ensure they were used to enhance learning while maintaining academic integrity. By thoughtfully integrating four specific AI tools: Grammarly, ChatGPT, ProWritingAid, and Hemingway into the classroom, she aimed to provide the necessary support to help students overcome initial hurdles in writing assignments, fostering a more productive and engaging learning environment. Each week, she and her students explored the concept of AI, engaging with TED Talks about AI technology to lay a foundational understanding. Following these discussions, they experimented with those four different AI tools during typical in-class writing assignments. In her class, most writing assignments required students to compose complete sentences and cite textual evidence from assigned readings in their English Language Arts curriculum. Tools like Grammarly and ChatGPT were utilized to enhance the overall quality of student writing, while ProWritingAid and Hemingway were especially helpful for students struggling with conciseness and style.

Data Collection

The teacher collected two different data sources for this project from a freshman class at a small rural high school in western Nebraska. Her first data source consisted of educator observation forms, which she completed during the AI implementation period (appendix 1). This observation checklist helped her focus on important questions relating to the implementation process. Instead of filling out an observation form for each student, she placed 20 freshmen in five groups of four and wrote observations for each group. Another form of data collection was from group surveys (appendix 2). Groups received paper copies of the surveys after applying the AI tool while writing. She collected the surveys from groups and analyzed the feedback. These surveys helped her collect student opinions regarding AI and its benefit to student writing beyond her limited observations.

She began the AI implementation in four weeks and collected four total weeks of data. During the first week, she introduced the AI writing tool Grammarly, with which students quickly became proficient. The following week, she introduced ChatGPT. In the third week, students used ProWritingAid, and finally, they experimented with a tool called Hemingway. Responses to the Group Surveys indicated that students who were least familiar with Grammarly were English Language Learners (ELL) while the rest of the students reported that they had used Grammarly before. Three groups claimed to have used AI writing aids "frequently". One group marked "rarely or never" and another marked "sometimes." The four groups that were familiar

with Grammarly marked that they "strongly agreed" that AI writing tools have helped them develop their writing skills while the group with less experience with the tool marked "neutral." Next, she had students discuss and use ChatGPT. All five groups, including her ELL group, were familiar with ChatGPT and marked "frequently" for using ChatGPT as well. According to the teacher, the results of question 4 "Do you believe that AI writing tools have helped you develop your own writing skills? " surprised her somewhat. When asked to examine the selected AI writing tool's effect on student writing, three groups selected "neutral" regarding AI improving their writing skills. One group marked "disagree" and another marked "strongly disagree." Many groups wrote under their circled response that they did enjoy using ChatGPT, and it does "help their writing sound better." However, they did not think their writing skills developed by using the tool. Some students expressed how it is easier to use ChatGPT to improve their grades for writing assignments. The next AI tool introduced was ProWritingAid. This implementation was the least successful because it was difficult to get the free trial period working on students' Chromebooks. Furthermore, this app was less familiar to students compared to tools like Grammarly and ChatGPT. Only one group selected that they had used the ProWritingAid tool, while the four other groups marked "no". Similarly, the frequency of use of the tool for all five groups was "rarely or never". After eventually getting the tool to work and using it, one group marked that they "agreed" that ProWritingAid could enhance their writing skills. This group particularly liked the fact they can select the type of writer they are, including academic, fiction, non-fiction, business, technical, creative, and so on! Four other groups marked "neutral" for question 4 "Do you believe that AI writing tools have helped you develop your own writing skills? ". The last writing tool intervention she introduced was Hemingway Editor, notably named after American author Ernest Hemingway due to his concise, ambiguous writing style. Only one group had used Hemingway before, while four other groups selected "no". All five groups selected "rarely or never" on the frequency of using Hemingway for assignments. After the implementation of Hemingway in class, three groups selected "agree" to the question about the tool improving student writing while two other groups selected "neutral." The tool can reduce the number of words and sentences used.

In the observed integration of AI tools into her class, the teacher noted varying levels of student engagement and interaction across different AI platforms such as Grammarly, ChatGPT, ProWritingAid, and Hemingway. Initially, Grammarly was met with positive engagement as students explored its capabilities beyond basic grammar checks, delving into features that refined the intent and formality of their writing. This engagement was characterized by emotions ranging from neutral to surprise, especially as students discovered Grammarly's "intent" feature, which many had not used before. One student remarked, "*I've used Grammarly to fix my writing but don't think much about the intent,*" highlighting a newfound awareness of the tool's potential. However, the introduction of ChatGPT and Hemingway brought forth different challenges and observations. ChatGPT, used in a more in-depth writing assignment on John Steinbeck's Of Mice and Men, was initially discussed in the context of its controversial aspects in education. The teacher noted, "*Before giving a demonstration of the AI writing generator, students and I discussed why ChatGPT is currently so controversial*". Post-discussion, students used ChatGPT to refine their drafts, requesting the AI to make their paragraphs sound better or make their paragraphs shorter. Despite its benefits in enhancing the text, the tool's complex vocabulary sometimes hindered comprehension, especially for ELL students, leading to a crucial realization

about the appropriateness of AI tools for diverse student needs. ProWritingAid presented technical challenges, particularly with software compatibility on Chromebooks, which affected its usability and led to decreased student engagement. Despite these challenges, the tool offered comprehensive writing features, though they were sometimes overwhelming for both students and the teacher. The Hemingway tool was introduced last, focusing on improving conciseness in writing. The teacher observed, "*Some of my students struggle with conciseness in their writing... I wanted to see if Hemingway could reduce the 'wordiness' of some responses*". This tool was generally well-received, with three out of five groups finding it useful for improving writing clarity and conciseness. Hemingway's ability to provide a readability score was also noted as a potentially valuable feature for assessing and guiding student writing levels at the start of the academic year. During the implementation phase, the teacher observed that three out of five student groups found Hemingway useful in reducing wordiness and improving the clarity of their writing. The tool's readability score feature was particularly beneficial for students to assess and adjust the complexity of their sentences. For instance, one group noted that Hemingway helped them cut down unnecessary words and achieve a more direct and impactful writing style. This observation was supported by the teacher's reflective journal, which highlighted that students, who previously struggled with conciseness showed significant improvement in crafting clearer and more concise responses after using Hemingway. The positive reception and noticeable enhancement in writing quality among these groups underscore Hemingway's effectiveness in addressing the specific challenge of wordiness in student writing.

In addition to those two data sources, the teacher kept a reflective journal entry highlighting her experiences integrating AI writing tools once a week for four weeks. The teacher also agreed to share her reflective journal as a third data source with the researcher. By using multiple data sources including classroom observations, students' surveys, and teacher's reflective journal, we can cross-check information and confirm consistent patterns. This approach reduces biases and enhances the credibility of results, providing a more comprehensive understanding of educational practices and student experiences. As noted in her journal, the integration of AI writing tools into her classroom activities provided both the students and the teacher with a deeper understanding of AI technology. She anticipated that the study would reduce student anxiety, boost confidence levels in writing, and enhance the quality of student work. While the quality of work was challenging to quantify, she observed a notable increase in students' confidence and positive emotions as they persevered through writing assignments as she noted, "*I did observe positive emotions, specifically increased levels of confidence as students persevered during writing assignments.*" Despite the overall success, several challenges emerged, including occasional lack of interest, unfamiliarity with certain tools, and issues related to cost and compatibility. The teacher reflected, "*Challenges emerged during this process, which include a lack of interest at times, a lack of familiarity with certain tools, and cost/compatibility issues.*" She also remarked that AI tools could effectively teach "big picture" English writing concepts such as writer's purpose, style, tone, and plagiarism detection. She stated, "*Specific features within AI writing tools can be helpful for teaching students 'big picture' English writing concepts such as writer's purpose, style and tone, and even citations by highlighting plagiarism.*" According to her, these tools provided valuable support in illustrating complex writing principles and enhancing students' understanding. The teacher emphasized the importance of maintaining the goal of education—to develop critical thinkers. She remarked, "*The main lingering question is how do*

teachers balance allowing students to use AI without fostering a reliance on technology?" Over-reliance on AI raises ethical questions related to cheating and plagiarism. The teacher highlighted the necessity for clear guidelines and designated AI usage time to mitigate these risks, noting, "*Teachers can learn more about AI and set aside specific AI usage time and communicate specific guidelines for how students are to use AI.*" Also reflecting on the experience, the teacher stressed the importance of professional development focused on emerging AI technologies. She pointed out, "*The importance of more professional development centered on emerging AI technologies is crucial.*" By learning more about AI and experimenting with its applications, educators can better integrate these tools to benefit their students. According to her, AI should not replace educators but serve as a complementary tool to enrich the learning process.

In summary, the integration of AI writing tools in a freshman English class at a rural high school provided insightful results. Data collected from the teacher observations and group surveys revealed that while ELL students were less familiar with Grammarly, most other students had prior experience with it and used it frequently. Grammarly was found to boost confidence and enhance writing skills. ChatGPT, although familiar and frequently used, had mixed reviews regarding its impact on writing development, with some students appreciating its ability to improve writing quality but not necessarily their writing skills. ProWritingAid faced technical challenges and lower familiarity, resulting in minimal engagement and mixed feedback on its effectiveness. Hemingway was well-received for improving writing conciseness and clarity. The teacher observed increased her student confidence and positive emotions but also noted challenges such as occasional lack of interest, technical issues, and the need for clear guidelines to prevent overreliance on AI. She emphasized the importance of professional development to effectively integrate AI tools, suggesting that AI should complement rather than replace traditional teaching methods.

Discussion

The integration of AI writing tools within a rural high school English classroom has highlighted several pedagogical insights and practical challenges. The teacher's observation form, group surveys and journal reflective questions have provided a multifaceted view of how such tools— Grammarly, ChatGPT, ProWritingAid, and Hemingway—impact student learning. Initially, Grammarly was met with positive engagement, improving students' confidence and proficiency in writing. However, as subsequent tools were introduced, varying levels of familiarity and technical challenges influenced their effectiveness. For instance, ProWritingAid was less successful due to compatibility issues with Chromebooks, underscoring the critical role of infrastructure in the effective deployment of technology in education. Survey responses indicated that while students appreciated the AI tools for improving the presentation of their writing, they were uncertain about the tools' impact on genuine skill development. This observation is pivotal as it highlights a potential disconnect between using technology as a support mechanism and its effectiveness in enhancing fundamental writing abilities. Students valued the convenience and immediate feedback from AI tools like Grammarly and ChatGPT. However, some voiced concerns that these tools might not foster a deeper comprehension or advancement of writing skills, potentially serving more as shortcuts to complete assignments rather than educational aids. This concern reflects the findings of Johnson and Smith (2022), who noted a similar lack of

substantial skill development and critical engagement with writing among students relying on AI tools.

The discussion about ChatGPT was particularly revealing, showing both the opportunities and the controversies surrounding AI in education. While it helped students enhance their drafts and made writing assignments less daunting, there was an ongoing debate about its appropriateness, especially for ELL students who might struggle with the advanced language output from the tool (Lee & Nguyen, 2021).

From a pedagogical perspective, these tools have been instrumental in teaching complex writing aspects such as style, tone, and plagiarism. However, the teacher's reflection highlights a significant concern: the risk of developing an overreliance on these technologies. The ethical implications, such as potential increases in plagiarism and reduced student engagement with the learning process, were noted as areas needing vigilant monitoring and guidance (Cardona, Rodríguez & Ishmael, 2023).

Looking forward, the study underscores the importance of a balanced approach to integrating AI in educational settings. It suggests that while AI can be a powerful tool for enhancing educational outcomes, its role should be carefully managed to complement traditional teaching methods rather than replace them. This involves not only providing the necessary technical infrastructure but also ensuring that both teachers and students are adequately prepared to use these technologies effectively. The teacher's reflection advocates for more professional development focused on AI, to equip educators with the knowledge and skills needed to integrate these tools responsibly and effectively (Thompson & Lee, 2025).

In conclusion, while AI tools offer promising benefits in educational contexts, particularly for enhancing writing skills and reducing student anxiety, they also pose challenges that require thoughtful integration into the curriculum. The findings from this study contribute to the broader dialogue on educational equity and technology integration, emphasizing the need for ongoing research, professional development, and ethical consideration in the use of AI in education.

Implications of the Study

The findings of this study have several important implications for the integration of AI writing tools in educational settings, particularly in rural high schools. First, the use of AI tools like Grammarly, ChatGPT, ProWritingAid, and Hemingway offers a valuable opportunity to enhance the presentation aspects of student writing, which could lead to increased confidence and engagement with writing tasks. However, the study also raises critical concerns about the depth of learning and development of intrinsic writing skills when relying heavily on AI tools.

1. Curriculum Development: Educators should consider how AI tools are integrated into the curriculum. While these tools can enhance the writing process by correcting grammar and suggesting improvements, there is a need to ensure they are used to complement traditional teaching methods that emphasize critical thinking and writing skill development. Educators might incorporate AI tools as part of a broader strategy that includes explicit instruction on writing mechanics, style, and structure, thus maintaining a balance between automated assistance and rigorous educational standards.

2. Teacher Training: The effectiveness of AI tools heavily depends on the level of teacher preparedness to integrate these technologies into their teaching practices effectively. Professional development programs should be designed to equip teachers with the necessary skills to use AI tools judiciously, emphasizing the pedagogical strategies that leverage AI for teaching complex writing concepts without fostering overreliance. Professional development is crucial for the effective integration of AI tools in education because it equips teachers with the necessary skills and knowledge to utilize these technologies to their fullest potential. Without proper training, teachers may struggle to incorporate AI tools effectively into their lesson plans, potentially leading to underutilization or misuse. As noted in the study, AI tools like Grammarly, ChatGPT, ProWritingAid, and Hemingway can enhance various aspects of student writing, but their impact is significantly amplified when teachers are well-versed in both the technical and pedagogical aspects of these tools. Professional development programs help teachers understand how to balance the use of AI with traditional teaching methods, ensuring that AI tools complement rather than replace the essential elements of critical thinking and personalized instruction. Moreover, ongoing professional development allows teachers to stay updated on the latest advancements and best practices in AI technology, fostering an educational environment that is both innovative and effective.

3. Ethical Considerations and Digital Literacy: This study highlights the ethical considerations necessary when integrating AI into writing instruction, particularly the risks associated with plagiarism and the potential for students to become overly dependent on technology. Educational stakeholders should create clear guidelines and instructional strategies that teach students not only how to use AI tools effectively but also how to critically evaluate the assistance these tools provide. Additionally, fostering digital literacy becomes crucial, ensuring students understand both the capabilities and limitations of AI in academic settings.

4. Policy and Infrastructure: For rural schools, where technological disparities can limit the effective use of AI tools, policymakers need to consider infrastructural investments that ensure equitable access to advanced technologies. Enhancing internet connectivity and providing modern computing facilities would support the successful implementation of AI tools and reduce the digital divide.

5. Further Research: The findings suggest a need for ongoing research to explore the longitudinal effects of AI tools on student writing and learning outcomes across diverse educational settings. Future studies could focus on specific aspects of AI integration, such as the impact on English Language Learners (ELLs) or the differential effects based on students' initial writing proficiency levels.

By addressing these implications, educators and policymakers can better harness the potential of AI tools to enhance educational outcomes while lowering the risks associated with their use. This balanced approach will be crucial in preparing students not only to succeed academically but also to thrive in a technologically advanced society.

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Appendix 1: Educator Observation Form

Observer's Name:

Date of Observation:
Group Observed:

AI Integration with Writing
1. Describe which AI tool is being covered and then implemented into the writing assignment.

2. Describe if groups were actively engaged or not when using the AI tool.

Student Integration with AI
3. How are students interacting with AI during the lesson? (Emotions observed could include: excited, frustrated, indifferent, etc.)

4. Were students able to use the AI tool effectively or was it difficult to use for whatever reason (software compatibility with Chromebooks, cost, etc.)?

5. Describe any positive or negative observations in student interaction with AI.

Overall Observations
6. What are areas of improvement were identified in integrating AI tools in the classroom?

Another form of data collection was from group surveys (appendix 2). Groups received paper copies of the surveys after applying the AI tool while writing. I collected the surveys from groups and read the feedback. These surveys helped me gauge student opinions regarding AI and its benefit to student writing beyond my limited observations.

Appendix 2: Group Surveys

Group:
Date:

Directions: Circle the answer that fits with the majority of the group.
1. Have you used this particular type of AI writing tool before?
    Yes
    No

2. How often do you use this AI writing tool? (This could be in English or another class).
    Rarely or never
    Sometimes
    Frequently

3. How easy do you find it to use AI writing tools?
    Very easy
    Somewhat easy
    Neutral
    Somewhat difficult
    Very difficult

4. Do you believe that AI writing tools have helped you develop your own writing skills?
    Strongly agree
    Agree
    Neutral
    Disagree
    Strongly disagree

5. What are the types of AI writing tools that you prefer?
    Grammar checkers
    Writing assistants/ suggestions
    Brainstorming tools
    Other: _____ (specify)

Finally, I obtained data via reflective journal questions (appendix 3), which were completed after students experimented with the weekly AI tool. The purpose of the journal is for myself and other educators, who may replicate this study, to consider the effectiveness of the intervention, what was learned, and how the results may impact their future instructional practices. The reflective journal highlighted observed successes, challenges, and new learning opportunities.

Appendix 3: Reflective Journal Questions

1. What were your initial expectations and goals for integrating AI writing tools in the ELA classroom?

2. How did you envision the tools improving student writing?

3. Overall, how did students respond to the use of AI writing tools?

4. How will this intervention process impact your teaching practices?

5. How will this process possibly influence how you teach writing in the future?

6. Did you observe any improvement in student writing and/or confidence with writing?

7. What challenges did you encounter while implementing AI writing tools?

8. Reflect on any areas of professional development needed to effectively utilize AI in the ELA classroom.

9. What key takeaways do you have from this experience?