

AI as a Tool or a Shortcut? An Action Research Examination of Student Dependency on Artificial Intelligence in Writing Tasks

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Abstract

The rapid integration of Artificial Intelligence (AI) tools in education has transformed teaching and learning practices, particularly in students' writing processes. While AI offers significant benefits such as personalized feedback and time efficiency, concerns have emerged regarding students' growing dependency on these tools. This study investigates the extent to which secondary school students rely on AI for writing tasks and examines the impact of this reliance on their independent thinking and writing skills. Using an action research methodology, the study was conducted in an English classroom through three iterative cycles: observation of AI-assisted homework writing, assessment of in-class writing without AI support, and guided instruction on responsible AI use. Data was collected through classroom observations, students' written work, and teacher reflective notes. Findings revealed that excessive and unguided use of AI led to reduced confidence, limited idea generation, and weakened writing skills. However, results from the third cycle demonstrated that structured instructional strategies such as Think–Pair–Share and guided outlining significantly improved students' engagement, confidence, and originality in writing. The study concludes that AI itself is not detrimental to learning; rather, its educational value depends on responsible use and strong teacher guidance. The findings highlight the need for clear classroom policies, foundational skill development, and pedagogical balance to ensure AI functions as a supportive learning tool rather than a substitute for students' cognitive effort.

Keywords: Artificial Intelligence in Education; Student Dependency; Writing Skills; Action Research; Responsible AI Use; Critical Thinking

Introduction

Artificial Intelligence (AI) is rapidly transforming the landscape of education, becoming an integral part of teaching and learning in schools and universities (Xue et al.;2026: Prayuda et al.,2026). By enabling faster, more personalized, and more efficient learning experiences, AI supports both students and teachers in meaningful ways (Runca et al., 2026). Traditional classrooms are evolving into technology-driven learning environments where instruction is more adaptive and responsive to individual needs (Altamimi,2024). As a result, researchers and educators are increasingly exploring the potential of AI to enhance educational practices and improve learning outcomes in positive and innovative ways (Chen et al., 2026). Artificial Intelligence is being integrated into education in multiple ways to support teaching and learning processes (Chung et al.,2025). Adaptive learning systems, for instance, use AI to assess students' existing knowledge and identify areas where they need additional support (Akgun & Greenhow 2021). Based on this analysis, these systems deliver personalized lessons and activities aligned with individual learning levels (Kim, 2024) In addition, AI-powered chatbots and virtual assistants are increasingly used in schools and universities to answer students' queries, assist with assignments, and provide instant feedback. AI technologies also support automated assessment by grading tests, evaluating written work,

and analyzing student performance data, thereby reducing teachers' administrative workload and enabling them to focus more on instructional and individualized support (Abdullah & Ward, 2016). Despite these advantages, the use of AI in education presents several challenges. One major concern is data privacy, as AI systems collect and store large amounts of sensitive student information. Inadequate data protection may lead to misuse or security breaches (Akgun & Greenhow 2021). Another challenge relates to teacher preparedness, as not all educators possess the necessary skills or training to effectively implement AI tools in classroom settings (Al Darayseh, 2023). Furthermore, the growing dependence of students on AI applications such as chatbots, translation tools, and automated writing systems raises concerns about reduced critical thinking, problem-solving abilities, and creativity (Sun et al., 2024). When AI is used as a shortcut rather than a supportive learning tool, it may negatively impact students' academic development. Excessive reliance on AI can also weaken students' motivation to learn. When learners depend heavily on AI-generated answers, they may engage less in independent thinking and active problem solving, leading to decreased academic interest. Additionally, overuse of AI tools may reduce meaningful interaction between teachers and students, which is essential for developing deep understanding and effective learning skills (Zheng et al., 2023)

Nevertheless, the future of AI in education remains promising. When implemented responsibly, AI can enhance learning experiences by making them more engaging, personalized, and accessible, particularly for students with diverse learning needs (Zou & Huang 2023). AI also enables teachers to monitor student progress more efficiently and design effective instructional strategies. To maximize these benefits, educational institutions must ensure the ethical and balanced use of AI technologies. Collaboration among teachers, students, and policymakers is essential to promote the meaningful integration of AI while preventing excessive dependence on technology (Xue et al., 2026; Prayuda et al., 2026). Overall, AI holds significant potential to improve the effectiveness and quality of education if its challenges are carefully managed.

The rapid adoption of Artificial Intelligence (AI) in education has substantially altered teaching and learning practices, particularly through tools such as chatbots, virtual tutors, and adaptive learning systems that enable personalized instruction and timely feedback (Ambele et al., 2022). While these technologies offer considerable potential to enhance student engagement and learning efficiency, their widespread use has also raised concerns regarding students' increasing reliance on AI to complete academic tasks with limited cognitive involvement. Emerging evidence suggests that excessive dependence on AI may weaken the development of higher-order skills, including critical thinking, creativity, and independent problem solving (Akhmadaliyeva, 2025). When AI shifts from a supportive resource to a substitute for students' intellectual effort, its educational value becomes questionable. Concurrently, many educators and institutions face difficulties in integrating AI effectively due to inadequate professional training, limited pedagogical guidance, and unresolved ethical challenges. Issues related to data privacy, algorithmic bias, and the erosion of meaningful teacher-student interaction further complicate the responsible use of AI in educational settings (Sari et al., 2025). Although prior research has largely emphasized the benefits of AI-enhanced learning, less attention has been paid to the unintended consequences associated with student dependency and the instructional conditions under which such dependency emerges. Moreover, empirical studies offering guidance on how teachers can leverage AI to support learning without undermining students' autonomy remain scarce. Addressing this gap, the present study examines the challenges of AI use in educational contexts, with a particular focus on the mechanisms through which AI contributes to student dependency during learning activities. It further investigates how AI can be employed to enhance learning outcomes without diminishing students' independent engagement and explores pedagogical strategies that enable teachers to promote balanced, ethical, and responsible AI use. This study contributes to a deeper understanding of the opportunities and challenges associated with the use of Artificial Intelligence (AI) in educational contexts (Sajjad, 2024). By

examining AI-supported learning practices, it promotes students' awareness of AI as a facilitative tool rather than a replacement for independent cognitive effort, encouraging responsible and reflective use (Chung et al., 2024). The findings provide practical insights for educators on integrating AI effectively to enhance instructional efficiency, address diverse learning needs, and offer personalized academic support.

Additionally, the study draws attention to critical issues related to AI adoption, including data privacy, algorithmic bias, and the risk of student over-reliance on technology, thereby highlighting important ethical and pedagogical considerations for educational institutions. By advocating a balanced approach to AI use, this research supports the productive integration of AI while preserving essential human elements of learning, such as creativity, critical thinking, and meaningful teacher–student interaction. The study also offers evidence-based implications for policymakers and educational planners, informing decision-making on the responsible implementation of AI in formal education settings. This study advances understanding of both the potential and the risks associated with Artificial Intelligence (AI) in educational settings. By critically examining AI-supported learning practices, it encourages students to engage with AI as a supportive resource rather than a substitute for independent cognitive effort, thereby promoting responsible and reflective use. The findings offer practical guidance for educators on integrating AI to enhance instructional efficiency, address diverse learning needs, and support personalized learning. The study also highlights key ethical and pedagogical concerns, including data privacy, algorithmic bias, and the growing risk of student dependency on AI technologies. By emphasizing a balanced approach to AI adoption, this research supports the effective use of AI while safeguarding essential human dimensions of education, such as critical thinking, creativity, and meaningful teacher–student interaction. In addition, the study provides evidence-based implications for policymakers and educational planners, contributing to informed decision-making regarding the responsible integration of AI within formal education systems.

Literature Review

Artificial Intelligence (AI) has increasingly become a transformative force in education, offering substantial pedagogical benefits while simultaneously raising significant ethical, social, and practical concerns (Chung et al., 2025; Xue et al., 2026). Existing literature emphasizes that AI enhances teaching effectiveness by enabling educators to better understand learners' individual needs through data-driven insights (Chung et al., 2025). AI-powered systems facilitate personalized learning pathways, provide immediate formative feedback, and promote student engagement through immersive technologies such as virtual reality and augmented reality (Woo et al., 2025; Xiao et al., 2025). Moreover, AI applications reduce teachers' administrative workload by automating routine tasks, including grading, attendance tracking, and data management, thereby allowing educators to focus on higher-order instructional practices (Xiao et al., 2025; Sari et al., 2025). Despite these advantages, scholars caution that AI integration in education is accompanied by critical challenges. Unequal access to digital infrastructure may exacerbate existing educational inequalities, widening the digital divide among students from diverse socio-economic backgrounds (Ozan & Azap, 2026; Chung et al., 2025). Furthermore, concerns regarding data privacy, algorithmic bias, and transparency remain prominent, particularly when AI systems influence decisions related to student assessment and performance evaluation (Konstantinidou et al., 2026; Akgun & Greenhow, 2021). These ethical implications highlight the need for responsible and regulated use of AI technologies in educational contexts (Akgun & Greenhow, 2021; Falloon, 2020). The rapid advancement of AI has led to the development of widely adopted educational tools, most notably ChatGPT (Altamimi, 2024). Powered by machine learning and natural language processing, such tools enable human-like interaction, allowing users to generate written content, seek explanations, and receive academic support efficiently (Prayuda et al., 2026). Since its introduction in 2022, ChatGPT has gained global popularity due to its accessibility and conversational style, making learning more flexible and time-efficient (Altamimi, 2024; Carr, 2023). However, research also warns against

overreliance on generative AI, as excessive dependence may hinder students' critical thinking and independent learning skills (Carr, 2023; Falloon, 2020). Additionally, issues related to academic integrity, plagiarism, and content accuracy continue to challenge educators and institutions (Carr, 2023; Altamimi, 2024). Consequently, scholars emphasize the importance of guided and ethical AI use, where educators play a central role in promoting responsible, transparent, and meaningful engagement with AI tools (Falloon, 2020; Boxleitner, as cited in Carr, 2023). AI is also reshaping teaching and learning practices across educational levels by supporting adaptive instruction and learner-centered pedagogies (Jeon, 2021; Konstantinidou et al., 2026). Technologies such as virtual tutors, intelligent voice assistants, and AI-driven online learning platforms including Coursera, Udemy, and Khan Academy demonstrate how AI enhances accessibility and personalized learning experiences (Akhmadaliyeva, 2025; Carr, 2023). Automated assessment systems further assist teachers by efficiently evaluating student performance while enabling customized instructional support (Carr, 2023; Sari et al., 2025). Nevertheless, research consistently argues that AI cannot replace teachers, as human judgment, emotional intelligence, creativity, and ethical reasoning remain essential components of effective education (Kolchenko, 2018; Chan & Tsi, 2024; Falloon, 2020). In language teaching and learning, AI has shown considerable potential in enhancing instructional delivery and learner engagement. Studies indicate that AI-based tools simulate aspects of human intelligence to support language acquisition through interactive practice, immediate feedback, and personalized learning environments (Zheng et al., 2023; Woo et al., 2025). AI assists teachers in lesson planning and classroom instruction while enabling learners to practice language skills autonomously (Chung et al., 2025; Sajjad, 2024). These findings suggest that AI contributes positively to language education when integrated thoughtfully and pedagogically (Woo et al., 2025; Sajjad, 2024). In higher education, AI is increasingly recognized for its ability to provide flexible, personalized, and data-driven learning opportunities. Research highlights that AI allows students to learn anytime and anywhere while receiving tailored feedback on assignments and assessments, thereby improving learning outcomes (Xiao et al., 2024; Chan & Tsi, 2024). At the institutional level, AI adoption reflects broader technological shifts influencing university operations and academic practices (Jeon, 2021). However, scholars also stress that effective AI integration requires continuous research, policy development, and institutional support to address ethical, pedagogical, and infrastructural challenges (Chan & Tsi, 2024; Konstantinidou et al., 2026).

Methodology

This study aims to explore the increasing dependency of students on Artificial Intelligence (AI) tools and to examine the challenges and opportunities associated with the use of AI in classroom learning. To achieve these objectives, Action Research was selected as the research methodology, as it enables the researcher to investigate a real educational issue within the natural classroom setting and to observe students' actual learning behaviors (Saifuddin & Mohammad 2025). Action research is particularly effective in allowing teachers to identify problems, implement targeted instructional strategies, and evaluate improvements through a systematic and reflective process. This approach was considered appropriate for the present study because the primary focus was to understand students' reliance on AI tools and to develop effective pedagogical strategies to guide their responsible and meaningful use. The study adopted an Action Research Design consisting of three iterative cycles. Each cycle followed the structured stages of planning, action, observation, and reflection, enabling continuous evaluation and refinement of instructional practices across the research process.

Participants and Sample Size

The participants of the study were 24 secondary school students enrolled in an English language class. This sample size was considered appropriate for action research, as such studies emphasize depth of understanding and reflective practice rather than statistical generalization. A class size of 24 students allowed for close observation of individual and group learning behaviors across three action cycles while remaining manageable for data

collection and analysis. The selected students were those who regularly used AI tools for homework completion and writing tasks, making them directly relevant to the focus of the study.

Demographic Characteristics of Participants

The demographic profile of the participants included both male and female students, aged between 14 and 17 years, studying in Grades 9 and 10. All participants were enrolled in the same English class. Regarding AI usage patterns, students reported varying levels of AI tool use, ranging from daily use to occasional use, primarily for homework completion, writing assistance, and language support such as grammar and vocabulary development. A detailed summary of participants' demographic characteristics is presented in Table 3.1 which is obtained from survey responses.

Table 3.1 Demographic characteristics

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	12	50%
	Female	12	50%
Age Group	14–15 years	10	41.7%
	16–17 years	14	58.3%
Grade Level	Grade 9	11	45.8%
	Grade 10	13	54.2%
Subject Area	English Language	24	100%
Frequency of AI Tool Use	Daily	9	37.5%
	3–4 times per week	10	41.7%
	Occasionally	5	20.8%
Purpose of AI Use	Homework completion	24	100%
	Writing tasks	21	87.5%
	Grammar/Vocabulary support	18	75%

A purposive sampling technique was employed in this study. Participants were intentionally selected based on their frequent use of AI tools for academic purposes, particularly in English writing and homework tasks. This sampling method ensured that the participants possessed relevant experience with AI tools, thereby enhancing the relevance and depth of the data collected.

Data Collection Tools

To ensure rich and credible qualitative data, multiple data collection tools were used throughout the three action research cycles. These included:

- **Classroom observations** to examine students' learning behaviors and AI usage patterns
- **Students' written work**, including homework assignments and in-class writing tasks, to analyze changes in writing quality and AI dependency
- **Teacher's reflective notes**, maintained throughout the study to document observations, instructional decisions, and reflections on each action cycle

The use of multiple data sources supported triangulation and strengthened the trustworthiness of the findings.

Action Cycles:

The research was conducted over three action research cycles, with each cycle systematically following the stages of planning, action, observation, and reflection. Findings from each cycle informed subsequent instructional decisions, enabling continuous improvement in teaching strategies aimed at reducing unhealthy dependency on AI tools and promoting responsible AI-assisted learning.

Cycle 1: Observation of Students' Dependency on AI

The first action research cycle focused on observing the extent of students' dependency on AI tools in independent writing tasks. Students were assigned a simple essay as homework on a familiar topic that was appropriate for their language level and could reasonably be completed without external assistance. The purpose of this task was to examine whether students would rely on their own ideas and language skills or seek support from AI tools. Upon reviewing the submitted essays, notable patterns emerged. A majority of the responses were written in advanced and highly similar language, with vocabulary and sentence structures that exceeded the expected proficiency level of the students. In contrast, only two or three students produced essays that reflected individual expression and appropriate linguistic competence. These similarities strongly indicated that most students had relied on AI-generated content, particularly ChatGPT, to complete the assignment. This cycle involved observation and data collection only and did not include instructional intervention. The findings clearly revealed a high level of dependency on AI tools, indicating that students were prioritizing AI-generated responses over independent thinking and writing.

Cycle 2: In-Class Writing Task to Assess Actual Performance

The second cycle aimed to assess students' actual writing ability in the absence of AI assistance. To achieve this, the same essay topic was assigned as an in-class writing task during a regular lesson, where the use of digital devices and AI tools was not permitted. The results of this cycle highlighted a significant gap between students' homework performance and their actual writing competence. Only two or three students demonstrated the ability to write coherently and independently. Most students appeared hesitant and disengaged, struggling to generate ideas or organize their thoughts. Several students were unable to begin writing, while others produced only brief and fragmented sentences. These observations suggested that prolonged reliance on AI tools had negatively affected students' confidence, critical thinking, and foundational writing skills. This cycle provided clear evidence that excessive dependence on AI had limited students' ability to perform independently, thereby confirming the negative impact of uncontrolled AI use on learning.

Cycle 3: Guiding Students Toward Responsible Use of AI

The third cycle focused on addressing the identified problem by guiding students toward responsible and balanced use of AI tools. A structured instructional approach was implemented to encourage independent thinking while acknowledging the supportive role of AI. The cycle began with a Think–Pair–Share activity, in which students were given time to individually reflect on the essay topic, discuss ideas with a peer, and share selected ideas with the class. This activity was designed to stimulate independent thinking and reduce immediate reliance on AI. Following the discussion, explicit guidance was provided on ethical and appropriate use of AI tools. Students were informed that AI could be used for idea generation, vocabulary clarification, or grammar support, but not for copying complete answers. A guided writing strategy was then introduced, emphasizing the development of a basic essay structure consisting of an introduction, body, and conclusion. A sample outline was presented on the board to scaffold students' writing process. Students were then assigned the same essay task again under classroom conditions without access to AI tools. During the writing process, the teacher provided individual support to students who experienced difficulty. Analysis of students' drafts and final essays revealed noticeable improvement in engagement and effort. Although the language used remained simple, students demonstrated

increased confidence and originality in their writing. The findings from this cycle indicated that structured guidance and clear boundaries for AI use enabled students to regain control over their learning and reduced unhealthy dependency on AI tools.

Overall Reflection on the Action Research Cycles

The three action research cycles enabled a systematic exploration of students' dependency on AI tools and its effects on learning. The first cycle identified the existence of excessive reliance on AI, while the second cycle demonstrated its negative impact on students' independent writing skills. The third cycle addressed this challenge by implementing pedagogical strategies that promoted responsible AI use alongside independent thinking. Collectively, these cycles provided valuable insights into both the challenges and opportunities of AI integration in education and demonstrated that guided and ethical use of AI can support learning without undermining students' cognitive and academic development.

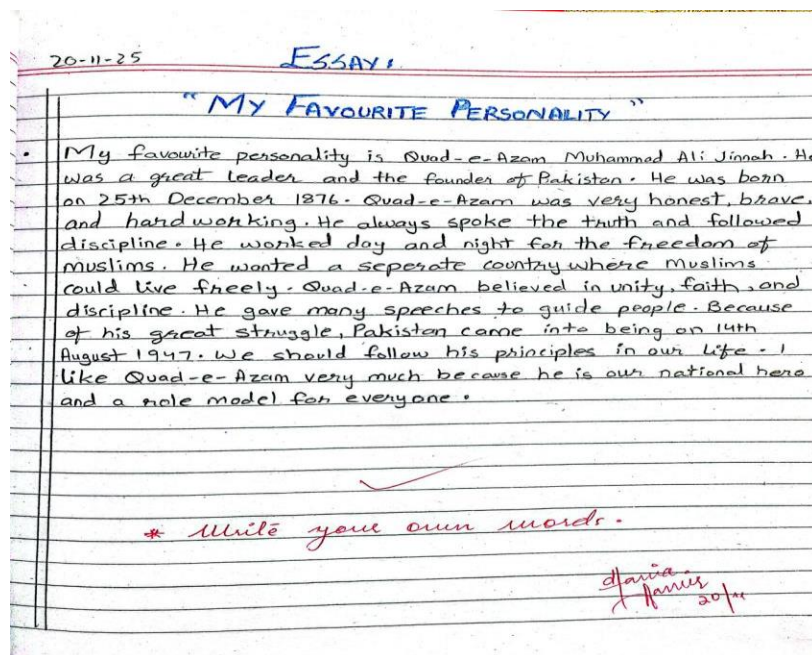
Data Analysis

The data collected in this study were analyzed using a cyclical qualitative analysis approach, consistent with the principles of action research. Data from all three action research cycles were examined systematically to identify patterns in students' dependency on Artificial Intelligence (AI) tools and to observe changes in their writing performance following pedagogical guidance. The primary data sources included students' homework assignments, in-class writing tasks, and the teacher-researcher's classroom observations. To ensure consistency across cycles, the same essay topic, "*My Favorite Personality*," was used throughout the study, allowing for direct comparison of students' writing performance under different conditions.

Cycle 1: Homework Writing on "My Favorite Personality"

In the first cycle, students were assigned a homework task requiring them to write an essay on the topic "*My Favourite Personality*." Analysis of the submitted assignments revealed a high degree of similarity across many students' responses. Common patterns were observed in terms of ideas, sentence structures, and vocabulary usage. Many essays contained advanced vocabulary and complex sentence constructions that were inconsistent with the students' typical English proficiency level demonstrated in classroom activities. In contrast, a small number of students produced essays written in simple, natural language that reflected individual expression and appropriate linguistic competence. These responses appeared more authentic and aligned with the students' known writing abilities. The marked contrast between these essays and the majority of submissions suggested that many students had relied on AI tools, particularly ChatGPT, to complete the homework task. The findings from this cycle indicated a significant level of dependency on AI for homework completion as depicted in Figure :4.1. Students appeared to prioritize polished, AI-generated responses over engaging in independent thinking and writing. This initial cycle played a crucial role in identifying the core issue of the study excessive reliance on AI tools which informed the planning and interventions implemented in the subsequent action research cycles.

Figure 4.1 Sample work :1



Cycle :2

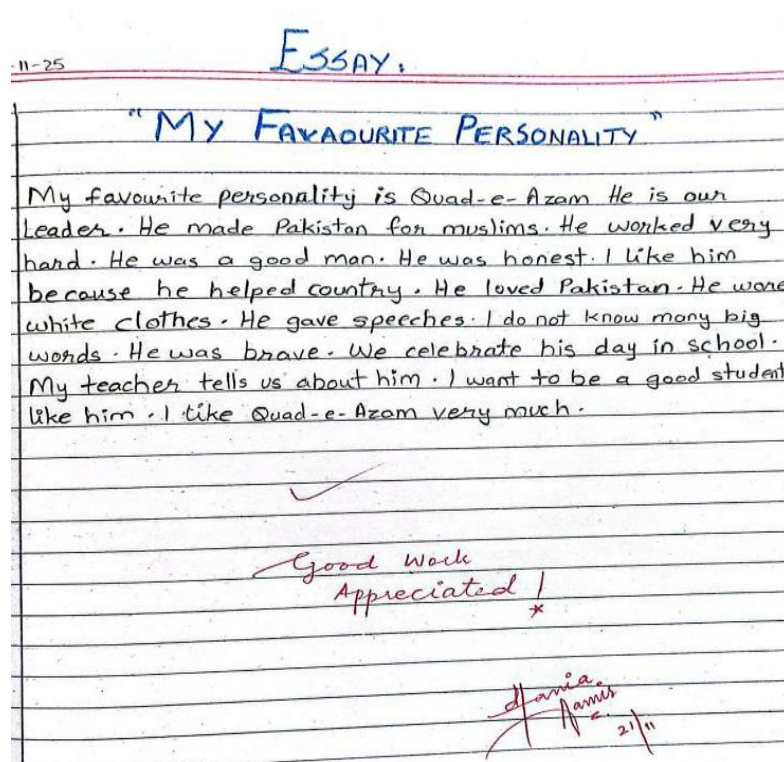
In the second cycle, students were asked to write an essay on the same topic, “*My Favourite Personality*,” under classroom conditions without access to AI tools or online resources. The purpose of this cycle was to assess students’ actual writing abilities and observe their performance in the absence of external technological support. Classroom observations revealed that a large number of students experienced difficulty initiating the writing task. Many appeared uncertain about how to begin and spent a considerable amount of time staring at blank pages. Several students produced only one or two short sentences before stopping, indicating limited idea generation and weak organization of thoughts. In addition, some students displayed signs of anxiety and repeatedly sought guidance on what to write, reflecting a lack of confidence in their independent writing abilities. Only two or three students were able to complete a coherent short essay independently. The overall findings of this cycle suggested that prolonged dependence on AI tools for homework completion had negatively affected students’ critical thinking and writing skills. The absence of AI support exposed gaps in students’ ability to generate ideas, structure content, and express themselves in writing. This cycle provided clear evidence that excessive reliance on AI can weaken learners’ autonomy and confidence, thereby reinforcing the need for guided and responsible integration of AI in the learning process.

Cycle 3: Writing After Instructional Guidance

The third cycle focused on examining changes in students’ writing performance after providing structured guidance on independent thinking and responsible writing practices. Prior to assigning the writing task, instructional support was offered through a Think–Pair–Share activity to encourage idea generation and collaborative discussion. In addition, students were taught to organize their essays using a simple outline consisting of an introduction, body, and conclusion. These strategies were intended to reduce students’ reliance on AI tools and strengthen their ability to plan and express ideas independently. Following this guidance, students were again asked to write an essay on the same topic, “*My Favourite Personality*,” during class time without access to AI or online resources. Analysis of the written work and classroom observations indicated noticeable improvement in students’ engagement and writing behavior. A greater number of students were able to begin writing without hesitation, and most produced complete essays using their own ideas. Although the language used was generally simple and contained grammatical errors, the responses reflected originality and individual effort. Compared to the previous cycles, students demonstrated increased

confidence and improved organization of ideas as shown in Figure : 4.2. They appeared more willing to attempt writing independently rather than waiting for external support. These findings suggest that structured instructional guidance and clear boundaries regarding AI use can positively influence students' writing development and reduce unhealthy dependency on AI tools. This cycle highlights the potential of pedagogical intervention to transform AI from a source of dependency into a supportive learning aid.

Figure :4.2 Sample Work :2



This showed that students can improve when they are taught how to use AI responsibly and how to think on their own.

Overall Analysis:

From all three cycles, it is observed that in the beginning, students were highly dependent on AI, especially for homework writing. This dependence negatively affected their thinking and writing skills. When AI was not available, many students struggled to write even a short paragraph. However, after proper guidance and support, students showed improvement. They started thinking on their own and writing in simple English. This analysis shows that students can improve their writing skills when they are guided on how to think independently and how to use AI responsibly, instead of depending on it completely.

Discussion and Conclusion

This study examined the use of Artificial Intelligence (AI) in school education, with particular emphasis on students' reliance on AI tools and their impact on learners' thinking and writing skills. The primary objective was to explore the negative implications of excessive AI use while also acknowledging the opportunities AI offers for enhancing teaching and learning. Through systematic classroom observation and analysis of students' written work, this action research provided a clear understanding of how AI influences students' learning behaviors in authentic educational settings (Jeon, 2021; Chung et al., 2025). The findings confirm that AI has become an integral component of contemporary education. Consistent with previous research, AI was found to support learning by saving time, providing immediate feedback, and assisting students in understanding complex concepts (Woo et al., 2025; Xiao et al., 2025). Students showed a strong preference for AI tools due to their convenience and efficiency, while teachers benefited from reduced workload through automated tasks such as grading and lesson planning (Sari et al., 2025; Carr, 2023). These findings support the view that, when used appropriately, AI can enhance engagement and instructional effectiveness (Konstantinidou et al., 2026; Falloon, 2020).

However, the study also revealed significant challenges associated with uncontrolled AI use. A key issue identified was students' increasing dependency on AI tools, particularly for homework and writing tasks. During the initial phase of the study, students submitted essays that were strikingly similar in content, vocabulary, and structure, suggesting heavy reliance on AI-generated responses rather than independent effort. This aligns with concerns raised in the literature that excessive AI use may encourage surface learning and reduce students' engagement in critical thinking and creative processes (Carr, 2023; Akgun & Greenhow, 2021).

Further evidence of this dependency emerged when students were asked to complete the same writing task in class without AI assistance. Many students struggled to generate ideas, organize their thoughts, and write coherently, indicating a decline in their foundational writing and thinking skills. Similar findings have been reported by researchers who argue that overreliance on AI can weaken learners' autonomy, confidence, and problem-solving abilities (Falloon, 2020; Chan & Tsi, 2024). These results suggest that AI, when used as a substitute for thinking rather than as a learning aid, may negatively affect students' cognitive development.

Importantly, the third phase of the study demonstrated that the issue lies not in AI itself but in how it is used. When students received structured guidance through strategies such as Think–Pair–Share and guided essay outlines, their writing performance and confidence improved noticeably. Students were more willing to express ideas in their own words and demonstrated greater engagement with the writing process. This finding supports existing research emphasizing the critical role of teacher guidance in ensuring ethical and pedagogically sound use of AI tools (Falloon, 2020; Kolchenko, 2018). It also reinforces the argument that AI should complement, rather than replace, human instruction and cognitive effort (Chan & Tsi, 2024).

Overall, this study confirms that while AI has the potential to increase students' dependency when used without regulation, it also offers valuable learning opportunities when integrated responsibly. Teachers play a central role in shaping students' interactions with AI by establishing clear guidelines, promoting independent thinking, and encouraging reflective use of technology. As highlighted in previous studies, AI functions most effectively as a supportive educational tool when combined with strong pedagogical practices and ethical awareness (Chung et al., 2025; Konstantinidou et al., 2026).

In conclusion, AI should not be viewed as entirely beneficial or harmful to education. Instead, its impact depends on how thoughtfully it is implemented and guided. This study

emphasizes the importance of balance students should first engage in independent thinking, writing, and problem-solving before using AI to refine ideas, clarify concepts, or receive feedback. With responsible use and active teacher involvement, AI can serve as a powerful partner in learning rather than a source of dependency. The future of AI in education therefore relies on informed use, critical awareness, and sustained pedagogical guidance.

Recommendations

The findings of this study revealed that excessive and unguided use of Artificial Intelligence (AI) tools led to increased student dependency, reduced confidence, and weakened independent writing and critical thinking skills. Based on these findings, the following recommendations are proposed:

As students demonstrated heavy reliance on AI for homework and writing tasks, teachers should establish clear rules defining acceptable and unacceptable AI use to prevent misuse and over-dependence. The study showed that students struggled to write independently during in-class tasks. Therefore, teachers should increase the use of brainstorming, discussion, and Think -Pair-Share activities to strengthen independent idea generation. As effective guidance reduced AI dependency, schools should offer professional development to help teachers implement AI responsibly in instructional practices.

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