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Academic Experiences and Best Practices in Utilizing AI-Powered Learning Tools: Inputs to Policy Framework Development

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Abstract

This study investigated the academic experiences and best practices of students and teachers in utilizing AI-powered tools in the Schools Division of Santiago City and aimed to generate evidence-based inputs for policy development. The study was guided by the Human–AI Interaction Theory, Technology Integration and Implementation Framework, and Learner Technology Appropriation Theory, which explain AI adoption, technology integration, and users' engagement with AI-supported learning environments. An explanatory sequential mixed-methods design was employed, beginning with quantitative data collection through a structured Likert-type survey questionnaire, followed by qualitative interviews to further explain participants' experiences, perceived benefits, and challenges. The respondents consisted of Grade 12 senior high school students and teachers from selected schools in the division who had experience using AI-powered tools for academic and instructional purposes. Results showed that students perceived AI-powered tools as beneficial in supporting academic tasks, improving time management, reducing cognitive load, and enhancing learning engagement. Teachers likewise reported that AI tools improved instructional preparation, teaching effectiveness, and professional efficiency. However, challenges were identified, including concerns on ethical use, dependence on AI, accuracy of AI-generated outputs, limited policy clarity, infrastructure constraints, and the need for continuous AI-related training and guidance. The study concluded that AI-powered tools can positively contribute to teaching and learning when implemented responsibly and supported by appropriate institutional policies. This study aligns with Sustainable Development Goal 4 (Quality Education) by supporting innovative, inclusive, and improved educational practices. It also contributes to sustainable educational governance by providing evidence-based policy inputs for ethical and responsible AI integration in schools.

Keywords: Academic Experiences; Artificial Intelligence; Best Practices; Educational Technology; Learning Engagement; Policy Development; Technology Integration; AI-Powered Tools

1. Introduction

The expansion of AI in education has introduced tools capable of providing personalized tutoring, adaptive materials, automated feedback, content support, and assistance in assessment and instructional planning. However, their educational value depends on ethical, safe, and purposeful implementation. AI adoption in education requires the development of critical competencies among educators and learners to effectively navigate changing learning environments. Holmes et al. (2019) positioned AI as an important means of improving engagement, academic achievement, collaborative learning, and the personalization of instructional practices. Recent studies further indicate that AI-supported tutoring and learning platforms can enhance student engagement and learning outcomes by providing adaptive support, immediate feedback, and personalized academic assistance

(Alarcon et al., 2021). Similarly, AI-powered learning environments have been recognized for their potential to improve student participation and academic experiences when integrated with appropriate instructional strategies and learner-centered approaches (Aldea, 2021).

Student use of AI has moved from occasional experimentation to regular academic support, with learners using AI for idea generation, writing assistance, summarization, research, feedback, and clarification of difficult concepts. These functions can reduce the time and effort required for routine academic work and provide immediate access to learning support. At the same time, AI adoption requires careful consideration because dependence, ethical uncertainty, and possible effects on creativity, critical thinking, and academic integrity remain important concerns. Teachers also use AI to analyze learning needs, improve instructional decisions, prepare materials, organize content, support assessment, and personalize instruction (Holmes et al., 2019). By automating repetitive activities such as grading and scheduling, AI can release time for lesson planning and direct pedagogical work (Williamson, 2017). Its contribution is strongest when it is paired with sound teaching practices and high-quality learning materials rather than treated as a substitute for pedagogy (Lee & Koh, 2020). These conditions make the responsible integration of AI both an instructional issue and an institutional governance concern.

The first major theme is AI tool utilization and academic integration. Educational institutions increasingly employ generative AI, intelligent tutoring systems, adaptive platforms, and automated feedback systems to support learning and instruction. These technologies can improve learning outcomes, motivation, and personalization, but student use differs in frequency, purpose, and perceived usefulness. Common applications include ChatGPT, Grammarly, and similar platforms for research, writing, brainstorming, and revision, while confidence in the accuracy and trustworthiness of AI-generated material remains a continuing concern. This pattern shows that access and use alone do not indicate meaningful integration; the quality of use depends on verification, learner judgment, and alignment with academic objectives. The second theme concerns learning engagement and outcomes. Purposeful AI integration can support participation, motivation, metacognition, creativity, critical thinking, and self-regulated learning. AI-supported environments may encourage learner initiative and provide individualized pathways and feedback for students requiring additional support (Holmes et al., 2019). The effectiveness of AI-supported learning is also related to the availability of instructional scaffolds that guide learners while maintaining active participation. Embedded scaffolds have been shown to support student-centered learning by providing structured assistance during complex learning activities (Brush & Saye, 2001). The literature nevertheless indicates that immediate assistance must be structured carefully so that efficiency does not replace sustained thinking, independent problem solving, or genuine mastery.

The third theme involves instructional and institutional conditions. Teacher readiness, pedagogical alignment, professional training, infrastructure, curriculum requirements, and administrative support shape whether AI becomes an effective instructional resource. Without adequate preparation, teachers may face difficulties in designing AI-supported activities that serve clear learning objectives. Effective integration therefore requires more than individual technical skill; it depends on coordinated support from teachers, schools, and governing institutions. The fourth theme covers benefits and challenges. AI can reduce instructional workload, automate repetitive tasks, facilitate personalized support, and improve access to explanations and learning resources. These benefits coexist with risks involving academic dishonesty, fabricated or inaccurate information, data privacy, digital dependency, unequal access, and resistance among teachers and learners. Concerns regarding AI replacing human teachers have also been raised, emphasizing that AI should complement rather than replace teacher expertise, professional judgment, and relational aspects of education (Selwyn, 2019). Ethical concerns surrounding AI implementation include issues related to privacy, bias, transparency, and responsible handling of learner information. These concerns highlight the need for institutional safeguards that ensure AI adoption remains aligned with educational values and learner protection (Cohen & Rupp, 2020). The tension between innovation and protection makes clear governance necessary. Taken together, the literature indicates that AI-powered tools can strengthen academic experiences when use is intentional, supervised, critically evaluated, and supported by institutional systems. Their effectiveness is constrained when schools lack reliable infrastructure, teacher capability, curriculum alignment, ethical safeguards, and clearly communicated policies.

Globally, AI-supported learning has expanded across basic and higher education, with students and teachers using learning assistants, generative systems, and adaptive applications for research, writing, tutoring, feedback, and instructional preparation. International evidence reports improved accessibility and efficiency, but continuing concerns about trust, ethical use, and the absence of clearly defined policies. These conditions have shifted the policy question from whether AI should be used to how it can be governed without weakening human judgment, academic integrity, and educational quality. The adoption of AI in educational institutions may also be viewed through diffusion theory, which explains how innovations spread through social systems based on perceived advantages, compatibility, complexity, trialability, and observability (Rogers, 2003). At the national level, the Philippine government's National AI Roadmap and the establishment of the National Centre for AI Research indicate a strategic commitment to AI development. Philippine education stakeholders have likewise recognized AI as an emerging component of future learning systems, emphasizing the need to balance innovation with responsible implementation, digital readiness, and educational priorities (Philippine Business for Education, 2021). The Department of Education has also considered standards for responsible AI use in schools while recognizing both its usefulness for research and lesson delivery and its potential misuse in examinations and academic papers. National implementation is further limited by infrastructure gaps, including schools that still

require electrical access, upgraded power systems, and adequate connectivity (Marcelo, 2024). Similar concerns have been observed in Philippine education, where AI-supported technologies may help address learning gaps but require adequate infrastructure, teacher readiness, and institutional support to ensure equitable implementation (Dela Cruz et al., 2020). These realities show that responsible AI policy must address both ethical practice and material access.

Philippine studies reflect uneven readiness across educational levels and settings. Research on AI-supported learning suggests that achievement and engagement can improve when AI is combined with appropriate pedagogical frameworks. Studies involving public-school teachers, science instruction, university students, and integrated schools describe moderate to positive use of AI for visualization, engagement, tutoring, automated assessment, homework, brainstorming, and real-time assistance, while repeatedly identifying unreliable infrastructure, limited training, uncertainty about accuracy, and insufficient guidance. Within the Schools Division of Santiago City, these global and national concerns become immediate institutional issues. Students and teachers already use AI-powered tools, but their experiences must be examined in relation to tool type, purpose, satisfaction, self-efficacy, cognitive load, time management, teacher guidance, curriculum alignment, school policies, infrastructure, and peer collaboration. Evidence from Santiago City National High School, Rizal National High School, and Divisoria High School is therefore necessary to determine whether prevailing practices are educationally sound, ethically responsible, equitable, and sufficiently supported.

The study is anchored in three complementary perspectives. The acceptance of educational technologies may be explained through technology acceptance perspectives, which emphasize that perceived usefulness and perceived ease of use influence users' willingness to adopt and continue using technological systems (Davis, 1989). It supports the examination of the types and purposes of AI use and the satisfaction of students and teachers, because acceptance and continued use depend partly on whether users understand AI outputs and retain authority over academic and instructional decisions. The Technology Integration and Implementation Framework (Hew & Brush, 2007) treats technology adoption as a systems process influenced by teacher support, curriculum alignment, institutional policy, and infrastructure. It provides the basis for examining instructional-related factors as conditions that either enable or constrain AI utilization and learning engagement. Learner engagement with AI-supported tools is also connected to motivation, as students' willingness to participate in learning activities is influenced by autonomy, competence, and meaningful involvement in the learning process (Deci et al., 1991). This perspective is consistent with constructivist views of learning, which emphasize that learners actively construct knowledge through interaction, reflection, and meaningful experiences rather than passively receiving information (Bada & Olusegun, 2015). AI-powered tools can therefore serve as learning supports that facilitate exploration, feedback, and knowledge construction when appropriately integrated into educational activities. The conceptual model proposes that AI-powered tool utilization influences learning engagement, while instructional-related factors shape the conditions under which this influence occurs. Best practices, perceived benefits, and challenges arising from this relationship provide the evidence base for policy development. The model therefore links individual interaction with AI, learner engagement, and institutional implementation within one analytical structure.

Existing scholarship provides substantial evidence that AI can improve access to academic support, instructional efficiency, personalization, engagement, and task completion. It also consistently documents ethical dilemmas, digital inequity, inadequate teacher preparation, unreliable infrastructure, uncertainty about output accuracy, and the absence of well-defined policies. However, much of the available work examines isolated outcomes, particular tools, higher-education settings, or general perceptions of AI readiness. Fewer studies integrate the experiences of both students and teachers across utilization, engagement, instructional conditions, benefits, challenges, and best practices within a single school-division context. A more specific gap exists in the Philippines, where limited empirical research directly converts the academic experiences of students and teachers into actionable school or division-level policy. Existing studies identify concerns but provide insufficient context-specific evidence on how actual users balance AI assistance with independent thinking, verification, curriculum requirements, academic integrity, and available infrastructure. Consequently, institutions may adopt AI extensively without consistent guidance, shared standards, or mechanisms for accountability. The present study addresses this gap by examining students and teachers in selected public secondary schools in Santiago City. It determines how AI-powered tools are used; how they relate to self-efficacy, cognitive load, time management, and engagement; how teacher guidance, curriculum alignment, policies, infrastructure, and collaboration affect use; and what benefits, challenges, and responsible practices are experienced by participants. Integrating these findings provides a defensible basis for formulating policy that supports ethical, equitable, pedagogically appropriate, and sustainable AI use.

The study primarily aligns with SDG 4 – Quality Education because it examines how AI-powered tools can improve learning support, engagement, instructional practice, and access to personalized academic assistance while protecting educational quality and integrity. Its focus on teacher guidance, curriculum alignment, learner self-efficacy, and responsible use supports inclusive and effective learning rather than technology adoption for its own sake. It also aligns with SDG 9 – Industry, Innovation and Infrastructure by assessing the educational application of AI and the infrastructure required for meaningful digital innovation. The study recognizes that devices, electricity, connectivity, technical resources, and institutional capability determine whether AI can be integrated reliably and equitably. The study contributes to SDG 10 – Reduced Inequalities because it considers

disparities in access, AI familiarity, infrastructure, and support that may create unequal learning opportunities. Digital inequality remains a significant concern in AI-supported education, particularly in contexts where differences in connectivity, technological resources, and digital readiness may affect learners' ability to benefit from emerging technologies (Villano, 2020). Identifying these constraints can inform policies that prevent AI-supported education from benefiting only learners and teachers with stronger technological resources or prior competencies. Finally, the study relates to SDG 16 – Peace, Justice, and Strong Institutions through its emphasis on transparent, ethical, accountable, and consistently implemented school policies. Clear governance of AI use can protect academic integrity, clarify acceptable practices, strengthen institutional trust, and establish fair expectations for students and teachers.

The study contributes to educational sustainability by identifying practices that strengthen learning and teaching without allowing AI to replace learner effort, teacher judgment, or established pedagogical principles. It supports technological and digital sustainability by examining whether AI adoption is matched by user capability, reliable infrastructure, critical evaluation of outputs, and responsible long-term integration. Its attention to access and preparedness advances socio-economic sustainability by exposing conditions that may widen digital inequality among schools, students, and teachers. Its policy orientation advances institutional and governance sustainability by translating user experiences into standards for ethical use, accountability, curriculum alignment, professional development, data responsibility, and academic integrity. The inclusion of both student and teacher perspectives also supports community sustainability because workable AI policies require shared expectations among learners, educators, administrators, and education authorities. The research is multidisciplinary because responsible AI use in schools is simultaneously a pedagogical, technological, ethical, organizational, infrastructural, and policy problem. By integrating these domains, the study provides a basis for AI adoption that is not only innovative but also equitable, context-sensitive, educationally defensible, and institutionally sustainable.

The study principally assesses the academic experiences and best practices of students and teachers in utilizing AI-powered tools in the Schools Division of Santiago City. It examines AI tool utilization in terms of the types of tools used, purpose of use, and user satisfaction; learning engagement in terms of self-efficacy, cognitive load, and time management; and instructional-related factors involving teacher support and guidance, curriculum alignment, school policies, infrastructure, and collaboration and peer interaction. It further identifies the best practices, perceived benefits, and challenges experienced by students in learning and by teachers in instruction and uses the findings to formulate policy for AI-powered learning tools. The quantitative component is guided by the following hypotheses: Null Hypothesis (H_0): AI-powered tools have no significant impact on students' engagement, motivation, and participation. Alternative Hypothesis (H_1): AI-powered tools have a significant impact on students' engagement, motivation, and participation.

The study is limited to selected Grade 12 students and teachers from Santiago City National High School, Rizal National High School, and Divisoria High School in the Schools Division of Santiago City during School Year 2025–2026. It focuses on participants with experience using AI-powered tools for academic or instructional purposes. The investigation covers academic experiences, best practices, perceived benefits, challenges, and policy inputs related to AI-powered tool utilization. Its findings are context-specific to the selected participants, schools, period, and variables and are intended to support policy development within the relevant educational setting.

2. Material and methods

2.1 Research Design

The study utilized an explanatory sequential mixed-methods design, combining quantitative and qualitative approaches to develop a comprehensive understanding of the research problem. The study began with quantitative data collection through a structured survey questionnaire to identify patterns and relationships among variables, followed by qualitative interviews to clarify and enrich the quantitative findings. Integration of both data sets occurred during interpretation, where qualitative results were used to explain statistical trends and provide deeper insights into the participants' experiences.

2.2 Locale of the Study

The study was conducted in the Schools Division of Santiago City, specifically involving Santiago City National High School, Rizal National High School, and Divisoria High School during School Year 2025–2026. The selected schools represented different school settings within the division and served as the locale for examining academic experiences and practices related to AI-powered learning tools.

2.3 Respondents of the Study

The respondents consisted of Grade 12 senior high school students and senior high school instructors from the selected schools. Participants were selected based on their actual experience using AI-powered learning tools for academic or instructional purposes. The study included 288 student respondents from a total population of 1,140 students and 54 teacher respondents from a total population of 62 teachers. Participants were selected because their experiences could provide relevant quantitative and qualitative information needed to address the objectives of the study.

2.4 Sample and Sampling Procedure

Purposive sampling was employed to identify participants with direct experience in using AI-powered tools. Student respondents were selected from schools classified as Mega and Large within the Santiago City Schools Division, while teacher respondents were chosen based on their experience and involvement in instructional activities. The inclusion criteria required students to be currently enrolled Grade 12 learners, at least 16 years old, experienced in using AI-powered learning tools, and willing to provide informed consent. Teachers were required to be currently teaching in the selected schools, have experience using AI-powered tools in instruction, and provide informed consent.

2.5 Research Instrument

The study utilized a researcher-made survey questionnaire as the primary instrument for gathering data regarding participants' experiences with AI-powered technologies. The instrument measured AI tool utilization, learning engagement, and instructional-related factors through a Likert-type scale. A pilot test was conducted to improve the clarity, reliability, and validity of the questionnaire before its administration to the selected respondents. The finalized instrument was distributed with appropriate instructions, and responses were collected and analyzed based on the research objectives.

2.6 Data Gathering Procedure

Data gathering began after securing approval from the Schools Division Office of Santiago City, school administrators, and the Institutional Review Board (IRB) of Isabela State University. Participants were informed about the purpose of the study, voluntary participation, confidentiality, and ethical considerations before providing consent. Quantitative data were collected through survey questionnaires, while qualitative data were gathered through semi-structured interviews. Interviews were recorded, transcribed, and coded for thematic analysis. Quantitative and qualitative findings were integrated to provide a comprehensive interpretation of participants' experiences and practices in using AI-powered learning tools.

2.7 Data Analysis Techniques

Quantitative and qualitative data were analyzed separately and integrated following the mixed-methods design. Survey responses were coded and analyzed using descriptive statistics, including frequency counts, percentages, weighted means, and standard deviations, to determine AI tool utilization, learning engagement, and instructional-related factors. Weighted mean and standard deviation were computed to interpret participants' responses regarding their academic experiences. Qualitative interview data were analyzed through thematic analysis to identify best practices, perceived benefits, and challenges encountered by students and teachers. Codes and recurring patterns were organized into themes that represented participants' experiences with AI-powered tools. The integration of quantitative and qualitative findings was used to identify strengths, gaps, and areas for policy development toward effective, ethical, and sustainable AI integration in education.

2.8 Ethical Considerations

The study followed ethical guidelines to protect the rights, dignity, and privacy of participants. Ethical procedures were guided by Creswell and Poth's ethical standards (2018) and van Manen's (2016) ethical guidelines. The researcher ensured voluntary participation, confidentiality, and responsible handling of research data. The researcher also declared that there was no conflict of interest that could influence the design, implementation, analysis, interpretation, or reporting of the study findings.

3. Results and Discussion

3.1 Academic Experiences in Utilizing AI-Powered Tools

3.1.1 Students' AI Tool Utilization

Students demonstrated a positive level of AI tool utilization, obtaining an overall mean of 2.96 (Agree). AI-powered tools were commonly used for grammar checking, summarizing lessons, generating ideas, improving academic outputs, and assisting with school-related tasks. AI Tool Usage obtained the highest category mean of 3.03, followed by User Satisfaction at 2.95 and Purpose of Use at 2.89. The findings indicate that students primarily use AI as an academic support resource rather than as a replacement for independent learning. AI functions mainly as a productivity tool that improves organization, efficiency, and access to academic assistance. This supports Zawacki-Richter et al. (2019), who identified that AI technologies are often initially adopted for efficiency-related academic purposes such as editing, organizing, and structuring outputs.

3.1.2 Students' Learning Engagement

Students reported a moderate level of learning engagement when using AI-powered tools, reflected by an overall mean of 2.87 (Agree). Time Management obtained the highest category mean of 2.93, followed by Cognitive Load at 2.86 and Self-Efficacy in Learning at 2.84. Students perceived AI as helpful in completing tasks faster, organizing information, reducing learning difficulties, and increasing confidence. The findings suggest that AI

strengthens academic efficiency and provides cognitive assistance, but it has not yet fully transformed students into highly autonomous learners. These results align with Lee and Koh (2020), who explained that AI learning technologies provide immediate support that strengthens learner confidence and autonomy. The findings also support Zawacki-Richter et al. (2019), emphasizing that structured guidance is necessary to prevent superficial learning outcomes.

3.1.3 Students' Instructional-Related Factors

Students perceived their instructional environment for AI use as moderately supportive, obtaining an overall mean of 2.87 (Agree). Collaboration and Peer Interaction recorded the highest category mean of 2.93, followed by School Policies on AI Usage at 2.91, Teacher Support and Guidance at 2.87, Availability of Infrastructure at 2.85, and Alignment with Curriculum at 2.79. The results show that AI-supported learning is strengthened by collaboration and teacher assistance, but curriculum integration and infrastructure remain areas for improvement. Teacher support remains essential for meaningful technology integration, consistent with Hew and Brush (2007). The need for clearer AI guidelines also supports Marcelo (2024), who emphasized responsible and ethical AI implementation in schools.

3.1.4 Teachers' AI Tool Utilization

Teachers demonstrated a higher level of AI utilization, with an overall mean of 3.35 (Agree). Teachers used AI tools for lesson preparation, instructional material development, content organization, and improving teaching effectiveness. Purpose of Use obtained the highest category mean of 3.42, followed by AI Tool Usage at 3.36 and User Satisfaction at 3.29. The findings indicate that teachers view AI as an instructional support mechanism that improves efficiency and reduces repetitive workload. AI assists teachers in designing materials and improving lesson delivery. These findings support Luckin et al. (2016), who highlighted AI's contribution to instructional design, and Baker and Smith (2019), who noted that AI can automate routine tasks and allow teachers to focus on higher-order teaching activities.

3.1.5 Teachers' Learning Engagement

Teachers reported positive engagement with AI-powered tools, obtaining an overall mean of 3.32 (Agree). Self-Efficacy in Learning obtained a mean of 3.34, Cognitive Load obtained 3.32, and Time Management obtained 3.30. The results indicate that AI supports teachers' confidence, reduces preparation demands, and assists in managing professional responsibilities. The findings demonstrate that AI contributes to teachers' professional effectiveness by providing cognitive and organizational support. AI enables teachers to focus more on instructional activities rather than repetitive preparation tasks. This supports Salazar (2022), who found that AI promotes teacher self-efficacy through flexibility, creativity, and problem-solving skills.

3.1.6 Teachers' Instructional-Related Factors

Teachers perceived institutional support for AI integration positively, obtaining an overall mean of 3.23 (Agree). Teacher Support and Guidance and Availability of Infrastructure obtained the highest category means of 3.39, followed by Curriculum Alignment at 3.32, Collaboration and Peer Interaction at 3.11, and School Policies on AI Usage at 2.97. The findings indicate that institutional support and infrastructure contribute to AI adoption, although policy development remains a major concern. Continuous professional development is necessary to strengthen teacher readiness, consistent with Sison et al. (2022). Clear governance frameworks are also needed to promote ethical and responsible AI use.

3.2 Best Practices and Challenges in AI Utilization

Qualitative findings revealed that students and teachers use AI as an academic and instructional assistance tool. Students reported using AI for brainstorming, summarizing lessons, understanding difficult concepts, checking outputs, and supporting independent learning. Teachers used AI for lesson preparation, instructional planning, and developing learning materials. Participants also identified challenges involving accuracy of AI outputs, dependence on technology, academic integrity, ethical concerns, and the need for clearer guidelines. The findings show that AI functions as a cognitive scaffold rather than a substitute for human learning and teaching. AI provides personalized assistance and feedback, supporting the findings of Aleven et al. (2013) and VanLehn (2011) regarding adaptive learning support. However, responsible use requires critical evaluation, ethical awareness, and institutional guidance.

3.3 Policy Implications for AI-Powered Learning Tools

The integrated findings identified the need for evidence-based policies that address responsible AI use, teacher preparation, infrastructure development, academic integrity, and ethical implementation. The study revealed that AI provides benefits in efficiency, collaboration, and instructional support while also presenting challenges related to governance and responsible use. The results emphasize the importance of developing institutional AI policies aligned with pedagogical objectives and ethical standards. Evidence-based frameworks are necessary to ensure that AI-powered tools enhance teaching and learning while maintaining academic quality and integrity.

4. Conclusion & Recommendations

The study concluded that AI-powered tools contribute to improved academic experiences among students and teachers by supporting learning engagement, comprehension, productivity, and instructional effectiveness. Both groups viewed AI as a beneficial support tool for teaching and learning; however, successful AI utilization depends on appropriate guidance, curriculum alignment, and structured instructional practices. Despite its advantages, AI adoption presents challenges related to over-reliance on technology, academic integrity, accuracy of AI-generated outputs, and insufficient institutional policies. The proposed A.I.D.E. Framework provides a practical policy approach to promoting ethical, responsible, and effective utilization of AI-powered tools in education.

It is recommended that policymakers develop comprehensive guidelines and structured frameworks, such as the A.I.D.E. Framework, to support the responsible integration of AI in education. Teachers should provide appropriate supervision and guidance while ensuring alignment with curriculum objectives, and students should use AI as a learning support tool while maintaining academic integrity and developing critical evaluation skills. Educational institutions should provide continuous training and professional development to enhance AI literacy among teachers and students, establish clear standards for acceptable AI practices, and provide necessary resources for ethical implementation. Future researchers may further examine the impact of AI on student achievement and explore its effectiveness across different educational settings and curricular areas.

5. Compliance with ethical standards

The author declares no conflict of interest. This study complied with recognized ethical standards for human-participant research by ensuring voluntary participation with informed consent, the right to withdraw without penalty, and strict confidentiality through anonymous, secure, and aggregated data handling. Given the focus on psychological well-being, procedures were non-invasive, and safeguards were observed to minimize discomfort, with guidance to appropriate support services when needed, and required institutional permissions were secured for instrument use and access to academic records.

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