The Innovative Role of Artificial Intelligence (AI) Tools in Enhancing Academic Buoyancy and Psychological Well-Being among Private School Students

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ABSTRACT

Artificial Intelligence (AI) has emerged as a transformative force in education, offering adaptive and personalized learning experiences that can enhance both academic outcomes and student well-being. This study examined the relationship between AI tool adoption, academic buoyancy, and psychological well-being among senior high school and college students in a selected private school in Laguna, Philippines. Guided by the Self-Determination Theory and Cognitive Load Theory, a descriptive-correlational design was employed using total enumeration sampling. Eighty-two students aged 16–24 completed a validated, paper-based survey comprising demographic information, the Technology Acceptance Model (perceived usefulness, ease of use, and user acceptance), the Academic Buoyancy Scale, and the Psychological Well-Being Scale. Results revealed high levels of AI adoption, academic buoyancy, and psychological well-being across the sample. Pearson correlation analysis indicated a significant moderate positive relationship between AI adoption and academic buoyancy ($p < 0.05$), as well as between AI adoption and psychological well-being ($p < 0.05$). Age and educational level significantly influenced academic buoyancy, whereas sex and place of residence did not. These findings highlight AI tools' potential to foster resilience, adaptability, and mental well-being when integrated into supportive educational environments. The study recommends the development of AI-based programs to promote equitable access, strengthen academic support systems, and enhance student wellness.

Keywords: Artificial Intelligence, Academic Buoyancy, Psychological Well-Being, Technology Acceptance Model, Self-Determination Theory, Cognitive Load Theory, Private School Students

INTRODUCTION AND BACKGROUND OF THE STUDY

Artificial Intelligence (AI) is transforming multiple sectors, including education, by providing innovative tools that deliver adaptive, personalized, and data-driven learning experiences. AI refers to the field of computer science that focuses on creating systems capable of performing tasks that typically require human intelligence, such as visual recognition, decision-making, and natural language processing (Pellicelli, 2023). In the educational context, AI is more than a technological add-on; it is reshaping traditional pedagogical models through intelligent tutoring systems, automated feedback mechanisms, and mental health applications that address both cognitive and socio-emotional aspects of learning (Wang et al., 2024).

One key area where AI can have a substantial impact is academic buoyancy, defined as students' capacity to respond positively to everyday academic challenges, such as managing workloads, meeting deadlines, and coping with setbacks (Putwain et al., 2020). Studies suggest that academic buoyancy is positively associated with resilience, motivation, and achievement-related behaviors (Rohinsa et al., 2020; Thomas & Ozer, 2024). AI's potential to enhance academic buoyancy lies in its ability to provide personalized learning pathways, immediate feedback, and tailored resources that strengthen students' self-regulation and problem-solving skills (Parra et al., 2024).

Equally important is the role of AI in supporting psychological well-being, a multidimensional construct encompassing emotional stability, autonomy, positive relationships, and purpose in life (Ryff, 2014). In fast-paced educational environments, students face increased risks of stress, anxiety, and depression, which can

impair academic performance and overall functioning (Alibudbud, 2021). Evidence shows that AI-powered interventions, such as chatbots, self-help applications, and adaptive cognitive-behavioral tools, can help reduce anxiety, promote emotional regulation, and enhance life satisfaction (Pavlopoulos et al., 2024; Chan, 2025).

Despite these promising applications, there remain concerns about equitable access to AI tools, data privacy, and the risk of technostress or overreliance on technology (MDPI, 2024; Villarino, 2024). In the Philippine context, where private educational institutions serve diverse student populations with varying degrees of digital literacy, it is crucial to understand how AI adoption relates to both academic resilience and mental health outcomes.

Grounded in the Self-Determination Theory (SDT) (Deci & Ryan, 1985) and Cognitive Load Theory (CLT) (Sweller, 1988), this study examines the relationship between AI tool adoption, academic buoyancy, and psychological well-being among private school students. SDT highlights the importance of autonomy, competence, and relatedness in fostering motivation and well-being, while CLT underscores the optimization of mental effort to enhance learning outcomes. Together, these frameworks provide a basis for exploring how AI tools can simultaneously reduce cognitive overload and satisfy basic psychological needs, ultimately improving resilience and well-being.

The primary objective of this study is to investigate the extent to which AI adoption predicts academic buoyancy and psychological well-being in a private school setting. The findings aim to inform educational policy and practice by guiding the integration of AI technologies into teaching and student support systems in ways that foster academic success and holistic development.

METHODOLOGY

This study utilized a descriptive-correlational research design to determine the relationship between the adoption of artificial intelligence (AI) tools, academic buoyancy, and psychological well-being among private school students. This non-experimental design was selected because it allows the observation of naturally occurring relationships between variables without manipulation, enabling the measurement of their strength and direction (Bhandari, 2021; Appinio, 2023). The research was conducted in a PACUCOA-accredited private school in Laguna, Philippines, which offers both senior high school and college programs. The institution was considered ideal for the study due to its access to modern digital resources, technology-enhanced classrooms, and a school health clinic staffed by a licensed nurse, reflecting its commitment to both academic and student welfare.

The study population consisted of senior high school and college students aged 16–24 years who had prior experience using AI tools for academic purposes. Inclusion criteria required participants to be officially enrolled during the June–July 2025 term, possess sufficient comprehension to answer the survey instrument, and voluntarily consent to participate. Students were excluded if they were absent during data collection, had no prior AI tool usage, or had conditions that could hinder accurate self-reporting. Given the small size of the population, total enumeration sampling was employed to include all qualified respondents (Crossman, 2020). Power analysis using G*Power 3.1.9.2 determined that a minimum of 82 participants was needed to detect a medium effect size (r = 0.30) with 80% statistical power at a 5% significance level.

Data collection was carried out using a four-part, paper-based, self-administered questionnaire adapted from established and validated instruments. Part A gathered demographic data, including age, sex, educational level, and place of residence. Part B was adapted from Davis' (1989) Technology Acceptance Model (TAM) and measured perceived usefulness, perceived ease of use, and user acceptance of AI tools (Chandrasekera et al., 2024). Part C utilized the Academic Buoyancy Scale by Jahedizadeh et al. (2019), which assessed sustainability, regulatory flexibility, positive personal eligibility, and acceptance of academic life. Part D measured psychological well-being using Ryff's (2014) multidimensional model, covering autonomy, environmental mastery, personal growth, positive relations, purpose in life, and self-acceptance. All items were rated on a four-point Likert scale ranging from 1 (strongly disagree) to 4 (strongly agree), with adaptations reviewed for cultural appropriateness and content relevance.

The instrument underwent rigorous validation and reliability testing before implementation. Content and face validity were established through the evaluation of 12 experts in education, psychology, and nursing. Items with a content validity index (CVI) of 0.79 or higher were retained, those between 0.70 and 0.79 were revised, and items below 0.70 were removed, following the guidelines of Polit and Beck (2021). Reliability testing through Cronbach's alpha indicated that all subscales met or exceeded the acceptable threshold of 0.70 (Taber, 2018).

Prior to data collection, permission was obtained from the Dean of the University of Perpetual Help System Dalta and from the private school's administration. Eligible students were briefed on the study's objectives, procedures, and their rights as participants, and written informed consent was obtained. Surveys were distributed and completed in classrooms under the researcher's supervision, taking approximately 10–15 minutes per respondent. Completed questionnaires were collected immediately to ensure completeness and accuracy.

Data were analyzed using SPSS software. Descriptive statistics such as frequency, percentage, weighted mean, and standard deviation summarized the demographic characteristics and variable scores. Inferential statistics included independent samples t-tests to compare academic buoyancy scores by sex and place of residence, one-way ANOVA to assess differences by age and educational level, and Pearson's product–moment correlation to examine relationships between AI adoption, academic buoyancy, and psychological well-being. The Shapiro–Wilk test assessed normality of continuous variables, and all analyses used a significance level of $\alpha = 0.05$.

Ethical principles were strictly observed throughout the research process. The study was approved by the Institutional Review Board of the University of Perpetual Help System Dalta. Participation was voluntary, and respondents were assured of confidentiality and anonymity, with the right to withdraw at any time without consequence. All data were stored securely and accessible only to the researcher, ensuring compliance with the ethical standards of the Declaration of Helsinki (World Medical Association, 2013).

RESULTS AND DISCUSSION

The analysis of the demographic profile of the 82 respondents revealed that the majority were female, aged between 16 and 21 years, and residing outside Metro Manila, with most enrolled at the college level. These demographics provided a diverse but predominantly young adult sample, aligning with the age group most active in digital technology use and adaptation (Fošner, 2024).

Findings from the Technology Acceptance Model (TAM) showed that students exhibited high levels of AI adoption, with strong agreement on perceived usefulness, perceived ease of use, and user acceptance. This suggests that students not only recognized the practical benefits of AI in enhancing their academic tasks but also found these tools easy to integrate into their learning routines. Such results are consistent with global trends reporting high acceptance of AI-powered platforms in education, particularly when these tools offer user-friendly interfaces and demonstrable benefits in academic performance (Parra et al., 2024; Wang et al., 2024).

Results from the Academic Buoyancy Scale indicated that students scored high across all four dimensions—sustainability, regulatory flexibility, positive personal eligibility, and acceptance of academic life. These findings imply that respondents possessed strong coping skills, adaptability, and motivation to persist despite academic challenges. The positive relationship between AI adoption and academic buoyancy found in this study mirrors the work of Khasawneh et al. (2024), who noted that AI-driven feedback systems and personalized learning plans can foster students' confidence and problem-solving abilities, enabling them to bounce back from setbacks more effectively.

Similarly, high scores were obtained in the Psychological Well-Being Scale, indicating strong autonomy, environmental mastery, personal growth, positive relations, purpose in life, and self-acceptance among participants. The significant positive correlation between AI adoption and psychological well-being supports the principles of Self-Determination Theory (Deci & Ryan, 1985), which underscores the importance of

fulfilling basic psychological needs—autonomy, competence, and relatedness—for optimal mental health. AI tools that provide tailored learning experiences, mastery-oriented tasks, and opportunities for collaboration can help meet these needs, leading to improved emotional well-being (Pavlopoulos et al., 2024).

Further analysis revealed that age and educational level significantly influenced academic buoyancy, suggesting that maturity and advanced academic exposure may enhance resilience and adaptability. These findings align with previous research indicating that older students often exhibit better self-regulation and coping strategies (Conway, 2022). On the other hand, no significant differences were found in academic buoyancy when grouped according to sex or place of residence, indicating that resilience may be influenced more by individual learning experiences and exposure to academic challenges than by gender or location.

While the results are promising, they should be interpreted with caution. Institutional support, faculty readiness, and equitable access to AI resources are critical factors that may affect the extent to which AI tools can influence student outcomes (MDPI, 2024). Furthermore, as Kundu and Bej (2025) warned, overreliance on AI tools may inadvertently reduce self-initiative and create technostress if not paired with appropriate human guidance and balanced learning approaches.

This study concludes that AI adoption has a significant positive association with both academic buoyancy and psychological well-being among private school students. Students who actively and effectively use AI tools tend to be more adaptable, resilient, and emotionally well-balanced in managing academic demands. Moreover, demographic variables such as age and educational level influence academic buoyancy, while sex and place of residence do not appear to play a significant role. These findings underscore the importance of integrating AI technologies into academic programs not only for cognitive gains but also for promoting mental wellness and resilience.

Based on the results, several recommendations are proposed. First, schools should integrate AI literacy into their curricula to maximize the academic and psychological benefits of these technologies while ensuring ethical and responsible use. Second, AI-supported academic and wellness programs should be developed to provide personalized learning support, mental health monitoring, and timely interventions for at-risk students. Third, faculty members should receive targeted training to effectively incorporate AI tools into teaching and student support services. Lastly, equitable access to AI technologies should be prioritized so that all students, regardless of socioeconomic background, can benefit from their potential to enhance both learning and well-being.

This study is limited by its cross-sectional design, which prevents the establishment of causal relationships between AI adoption, academic buoyancy, and psychological well-being. The use of a single private school as the research site also limits the generalizability of the findings to other educational contexts. Moreover, data were based on self-reported measures, which are subject to social desirability bias and recall errors. The study did not explore the long-term effects of AI adoption, indicating a need for longitudinal research to assess sustained impacts over time. Future studies may also benefit from incorporating qualitative methods to capture deeper insights into students' lived experiences with AI in learning environments.

REFERENCES

1. Alibudbud, R. C. (2021). On the mental health impact of the COVID-19 pandemic among Filipino students. Asian Journal of Psychiatry, 64, 102768. https://doi.org/10.1016/j.ajp.2021.102768
2. Appinio. (2023). Correlation analysis: Methods and applications. https://www.appinio.com/en/blog/correlation-analysis
3. Bhandari, P. (2021). An introduction to correlational research. Scribbr. https://www.scribbr.com/methodology/correlational-research
4. Chandrasekera, T., Yoon, S., & Lee, H. (2024). Extending the technology acceptance model in education: AI-assisted learning tools. Computers & Education, 196, 104741. https://doi.org/10.1016/j.compedu.2024.104741
5. Chan, C. (2025). Artificial intelligence in mental health support: Opportunities and challenges. Journal of Educational Technology Research, 38(2), 155–172.

6. Conway, C. (2022). Academic buoyancy as a predictor of academic stress among college students. Philippine Journal of Psychology, 55(2), 87–102.

7. Crossman, A. (2020). Understanding purposive sampling. ThoughtCo. https://www.thoughtco.com/purposive-sampling-3026727

8. Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS Quarterly, 13(3), 319–340. https://doi.org/10.2307/249008

9. Deci, E. L., & Ryan, R. M. (1985). Intrinsic motivation and self-determination in human behavior. Springer.

10. Fošner, A. (2024). Student perceptions of AI in higher education: Opportunities and challenges. International Journal of Educational Technology, 21(1), 34–49.

11. Jahedizadeh, S., Ghonsooly, B., & Ghanizadeh, A. (2019). Academic buoyancy: A scale validation in the EFL context. The Asia-Pacific Education Researcher, 28(1), 65–75. https://doi.org/10.1007/s40299-018-0407-2

12. Khasawneh, O., Gosling, C., & Williams, B. (2024). AI-assisted learning and student resilience: A systematic review. Computers & Education, 198, 104792. https://doi.org/10.1016/j.compedu.2024.104792

13. Kundu, A., & Bej, T. (2025). Balancing AI integration in education: Avoiding overdependence and technostress. Educational Technology Research and Development, 73(2), 211–230.

14. MDPI. (2024). Artificial intelligence in education: Implications for teaching and learning. Sustainability, 16(4), 2145. https://doi.org/10.3390/su16042145

15. Parra, A., González, M., & Ruiz, P. (2024). Adaptive AI in higher education: A systematic review. Computers & Education, 198, 104789. https://doi.org/10.1016/j.compedu.2024.104789

16. Pavlopoulos, V., Papadopoulou, D., & Karampelas, V. (2024). Artificial intelligence applications in promoting mental health. Frontiers in Psychology, 15, 1278932. https://doi.org/10.3389/fpsyg.2024.1278932

17. Pellicelli, M. (2023). Artificial intelligence and the future of education. Journal of Educational Management, 35(2), 115–130.

18. Polit, D. F., & Beck, C. T. (2021). Nursing research: Generating and assessing evidence for nursing practice (11th ed.). Wolters Kluwer.

19. Putwain, D., Daly, A., Chamberlain, S., & Sadreddini, S. (2020). Academically buoyant students are less anxious about tests and perform better in examinations. British Journal of Educational Psychology, 90(2), 272–287. https://doi.org/10.1111/bjep.12283

20. Rohinsa, A., Wibowo, S., & Nugroho, H. (2020). Academic buoyancy as a mediator in the relationship between parental support and academic performance. International Journal of Instruction, 13(4), 625–642. https://doi.org/10.29333/iji.2020.13439a

21. Ryff, C. D. (2014). Psychological well-being revisited: Advances in the science and practice of eudaimonia. Psychotherapy and Psychosomatics, 83(1), 10–28. https://doi.org/10.1159/000353263

22. Sweller, J. (1988). Cognitive load during problem solving: Effects on learning. Cognitive Science, 12(2), 257–285. https://doi.org/10.1207/s15516709cog1202_4

23. Taber, K. S. (2018). The use of Cronbach's alpha when developing and reporting research instruments in science education. Research in Science Education, 48(6), 1273–1296. https://doi.org/10.1007/s11165-016-9602-2

24. Thomas, M., & Ozer, M. (2024). The link between academic buoyancy and test anxiety in high school students. School Psychology International, 45(1), 58–74. https://doi.org/10.1177/01430343231175327

25. Villarino, A. (2024). Rural perspectives on AI in Philippine higher education: Adoption, barriers, and opportunities. Philippine Journal of Educational Technology, 12(1), 45–62.

26. Wang, X., Liu, H., & Zhang, Y. (2024). AI in personalized learning: A meta-analysis. Educational Technology & Society, 27(1), 25–40.

27. World Medical Association. (2013). World Medical Association Declaration of Helsinki: Ethical principles for medical research involving human subjects. JAMA, 310(20), 2191–2194. https://doi.org/10.1001/jama.2013.281053