Research Title 1: "The Impact of AI on Academic Performance: A Study on the Adoption of AI in Northern Bukidnon State College"

This study aims to explore how using AI affects the academic success of students at Northern Bukidnon State College (NBSC). With AI becoming more common in education, it's important to assess how it impacts students' learning, engagement, and overall academic performance in a specific university context. The research will look at the potential benefits and challenges of using AI at NBSC, focusing on its effects on students' thinking skills, critical reasoning, and creativity. By examining AI's impact on academic performance at NBSC, this study seeks to provide insights into the future of education at the university and contribute evidence to guide AI integration decisions in higher ed institutions in the Philippines.

Dekker et al., (2020) found that Al-enhanced interventions, such as chatbot-based mental health support combined with life-crafting interventions, have shown promise in optimizing students' mental health and academic performance. This research will build upon this evidence by specifically investigating the adoption of Al at NBSC and its influence on students' academic outcomes.

Intelligence et al., (2019) highlighted the significance of artificial intelligence in simulating human intelligence processes, enabling learning, reasoning, and self-correction properties in computer systems. This aligns with the aims of our study, which seeks to explore how AI technologies, including those enabling personalized teaching-learning environments and knowledge-based systems, impact academic performance at NBSC.

Fazil et al., (2024) examined the broad impact of AI technologies on student engagement and academic performance in university settings in Afghanistan. Their findings underscore the importance of

understanding Al's implications for effective pedagogical strategies and student readiness, which resonates with our research objectives at NBSC.

Wang et al.,(2023) proposed an AI-based prediction system for analyzing student behavior and performance, showcasing the potential of AI in improving academic outcomes. Such predictive models could be relevant for our study in assessing the effectiveness of AI interventions at NBSC.

de Souza Zanirato Maia et al., (2023) conducted a systematic review of Al applications in educational analytics, emphasizing the need for innovative solutions, particularly in the wake of the COVID-19 pandemic. Their insights can inform our examination of Al's role in enhancing educational practices and supporting student success at NBSC.

García-Martínez et al., (2023) conducted a meta-analysis highlighting the positive impact of AI and computational sciences on student performance across educational stages, particularly in STEM areas.

This provides valuable context for understanding the potential benefits of AI integration in our study context.

Li et al.,(2023) analyzed the multifaceted impact of AI on college students, addressing areas such as learning, employment, life, ethics, and expectations. Their findings can enrich our understanding of how AI adoption at NBSC may influence various aspects of student life and academic experiences.

Bilquise & Shaalan, (2022) proposed an AI-based academic advising framework, which could offer valuable insights into how AI can support students' academic progression and career goals. Understanding the challenges associated with current advising systems and the potential of AI tools can inform our study's recommendations for NBSC.

College, (2022) explored the potential impact of AI on international students in higher education, discussing applications such as personalized learning and predictive analytics. Their findings can contribute to our understanding of how AI may enhance the educational experiences of international students at NBSC.

Ayala-Pazmiño,(2023) examined both the benefits and risks of AI in education, emphasizing the need for empirical research and ethical considerations. Their insights into the transformative potential of AI align with our study's objectives of assessing AI's impact on academic performance at NBSC.

Dong, (2023) explored the practical implementation of AI-powered pedagogy in academic writing teaching, highlighting improvements in teaching processes and student engagement. This offers relevant insights for our study in evaluating AI interventions aimed at enhancing student learning outcomes at NBSC.

Koos & Wachsmann, (2023) discussed the implications of AI-driven language systems on academic paper writing, including benefits such as streamlining the writing process and concerns regarding plagiarism. Their recommendations for addressing ethical implications and promoting critical skills are pertinent to our study context.

Ahmad et al., (2023) investigated the impact of AI on decision-making, laziness, and privacy concerns among university students in Pakistan and China. Their findings on the potential risks of AI adoption underscore the importance of considering ethical and societal implications in our study at NBSC.

Naqvi et al., (2023) examined the potential of AI and robotics in higher education, using design fiction to illustrate future scenarios. Their exploration of opportunities and challenges can inform our study's discussion on the transformative effects of AI adoption at NBSC.

Jiao et al., (2022) developed an AI-enabled prediction model for student academic performance in online engineering education, highlighting the importance of leveraging AI to enhance learning outcomes. Their findings on the predictive power of AI models can inform our assessment of AI's impact on academic performance at NBSC.

References:

- Abdulnabi Ali, A., Golbert, Y., Reksa, A. F. A., Kretzer, M. M., & Schweiger, S. (2023). *Transformative Solutions in the Global South: Addressing Solid Waste Management Challenges in Jakarta Through Participation by Civil Society Organizations?* 329–351. https://doi.org/10.1007/978-3-031-15904-6 18
- Abubakar, I. R., Maniruzzaman, K. M., Dano, U. L., AlShihri, F. S., AlShammari, M. S., Ahmed, S. M. S., Al-Gehlani, W. A. G., & Alrawaf, T. I. (2022). Environmental Sustainability Impacts of Solid Waste

 Management Practices in the Global South. *International Journal of Environmental Research and Public Health*, 19(19). https://doi.org/10.3390/ijerph191912717
- Ahmad, S. F., Han, H., Alam, M. M., Rehmat, M. K., Irshad, M., Arraño-Muñoz, M., & Ariza-Montes, A. (2023). Impact of artificial intelligence on human loss in decision making, laziness and safety in education. *Humanities and Social Sciences Communications*, *10*(1), 1–14. https://doi.org/10.1057/s41599-023-01787-8
- Awino, F. B., & Apitz, S. E. (2024). Solid waste management in the context of the waste hierarchy and circular economy frameworks: An international critical review. *Integrated Environmental Assessment and Management*, 20(1), 9–35. https://doi.org/10.1002/ieam.4774
- Ayala-Pazmiño, M. (2023). Artificial Intelligence in Education: Exploring the Potential Benefits and Risks.

- 593 Digital Publisher CEIT, 8(3), 892–899. https://doi.org/10.33386/593dp.2023.3.1827
- Bespalyy, S. (2023). Waste management in the transition to green economy leading to environmental sustainability. *E3S Web of Conferences*, *390*. https://doi.org/10.1051/e3sconf/202339004018
- Bilquise, G., & Shaalan, K. (2022). Al-based Academic Advising Framework: A Knowledge Management Perspective. *International Journal of Advanced Computer Science and Applications*, *13*(8), 193–203. https://doi.org/10.14569/IJACSA.2022.0130823
- Bui, T. D., Tseng, J. W., Tseng, M. L., & Lim, M. K. (2022). Opportunities and challenges for solid waste reuse and recycling in emerging economies: A hybrid analysis. *Resources, Conservation and Recycling*, 177. https://doi.org/10.1016/j.resconrec.2021.105968
- College, W. B. (2022). Linyun Wang.
- Dabic-Miletic, S., & Simic, V. (2023). Smart and Sustainable Waste Tire Management: Decision-Making Challenges and Future Directions. *Decision Making Advances*, *1*(1), 10–16. https://doi.org/10.31181/v120232
- David, V. E., John, Y., & Hussain, S. (2020). Rethinking sustainability: a review of Liberia's municipal solid waste management systems, status, and challenges. *Journal of Material Cycles and Waste Management*, 22(5), 1299–1317. https://doi.org/10.1007/s10163-020-01046-x
- de Souza Zanirato Maia, J., Bueno, A. P. A., & Sato, J. R. (2023). Applications of Artificial Intelligence

 Models in Educational Analytics and Decision Making: A Systematic Review. *World*, *4*(2), 288–313.

 https://doi.org/10.3390/world4020019
- Dekker, I., De Jong, E. M., Schippers, M. C., De Bruijn-Smolders, M., Alexiou, A., & Giesbers, B. (2020).

 Optimizing Students' Mental Health and Academic Performance: Al-Enhanced Life Crafting. *Frontiers*

- in Psychology, 11(June), 1–15. https://doi.org/10.3389/fpsyg.2020.01063
- Dong, Y. (2023). Revolutionizing Academic English Writing through AI-Powered Pedagogy: Practical Exploration of Teaching Process and Assessment. *Journal of Higher Education Research*, *4*(2), 52. https://doi.org/10.32629/jher.v4i2.1188
- Farooq, M., Cheng, J., Khan, N. U., Saufi, R. A., Kanwal, N., & Bazkiaei, H. A. (2022). Sustainable Waste Management Companies with Innovative Smart Solutions: A Systematic Review and Conceptual Model. *Sustainability (Switzerland)*, *14*(20), 1–19. https://doi.org/10.3390/su142013146
- Fazil, A. W., Hakimi, M., Shahidzay, A. K., & Hasas, A. (2024). Exploring the Broad Impact of Al Technologies on Student Engagement and Academic Performance in University Settings in Afghanistan. *RIGGS: Journal of Artificial Intelligence and Digital Business*, *2*(2), 56–63. https://doi.org/10.31004/riggs.v2i2.268
- García-Martínez, I., Fernández-Batanero, J. M., Fernández-Cerero, J., & León, S. P. (2023). Analysing the Impact of Artificial Intelligence and Computational Sciences on Student Performance: Systematic Review and Meta-analysis. *Journal of New Approaches in Educational Research*, *12*(1), 171–197. https://doi.org/10.7821/naer.2023.1.1240
- Intelligence, A., Networks, C., Kumar, S., & Science, C. (2019). *IMPLEMENTATION OF ARTIFICIAL INTELLIGENCE IN IMPARTING EDUCATION AND EVALUATING STUDENT.* 01(01), 1–9.
- Jiao, P., Ouyang, F., Zhang, Q., & Alavi, A. H. (2022). Artificial intelligence-enabled prediction model of student academic performance in online engineering education. *Artificial Intelligence Review*, *55*(8), 6321–6344. https://doi.org/10.1007/s10462-022-10155-y
- Kadhila, T., de Wit, M. P., & Schenck, R. (2023). A conceptual framework for sustainable waste

- management in small municipalities: the cases of Langebaan, South Africa and Swakopmund, Namibia. *Environmental Science and Pollution Research*, 30(60), 125088–125103. https://doi.org/10.1007/s11356-023-26904-7
- Koos, S., & Wachsmann, S. (2023). Navigating the Impact of ChatGPT/GPT4 on Legal Academic Examinations: Challenges, Opportunities and Recommendations. *Media Iuris*, *6*(2), 255–270. https://doi.org/10.20473/mi.v6i2.45270
- Kumar S, R. (2019). Sustainable Management of Waste to Energy for Municipal and Petro-Chemical Industries. 6(3), 513–521.
- Li, J., Peng, Y., & Su, J. (2023). Analysis of the impact of artificial intelligence on college students and countermeasures based on the perspective of comprehensive development. *The Frontiers of Society, Science and Technology*, *5*(9), 24–33. https://doi.org/10.25236/fsst.2023.050905
- Naqvi, S. G., Iqbal, F., Yousaf, J., & Tariq, R. (2023). The Impact of Artificial Intelligence (AI) and Robotics on Higher Education. *Journal of Management Practices, Humanities and Social Sciences*, 7(3), 11–17. https://doi.org/10.33152/jmphss-7.3.2
- Oke, A., Pinas, C. J., & Osobajo, O. A. (2022). Designing effective waste management practices in developing economies: The case of Suriname. *Cleaner Waste Systems*, 3. https://doi.org/10.1016/j.clwas.2022.100030
- Pheakdey, D. V., Quan, N. Van, Khanh, T. D., & Xuan, T. D. (2022). Challenges and Priorities of Municipal Solid Waste Management in Cambodia. *International Journal of Environmental Research and Public Health*, 19(14). https://doi.org/10.3390/ijerph19148458
- Roos, C., Alberts, R. C., Retief, F. P., Cilliers, D. P., Hodgson, W., & Olivier, I. (2022). Challenges and

- opportunities for sustainable solid waste management in private nature reserves: The case of Sabi Sand Wildtuin, South Africa. *Koedoe*, *64*(1), 1–9. https://doi.org/10.4102/koedoe.v64i1.1710
- Srivastava, R. R., Rajak, D. K., Ilyas, S., Kim, H., & Pathak, P. (2023). Challenges, Regulations, and Case Studies on Sustainable Management of Industrial Waste. *Minerals*, *13*(1). https://doi.org/10.3390/min13010051
- Vinti, G., & Vaccari, M. (2022). Solid Waste Management in Rural Communities of Developing Countries:

 An Overview of Challenges and Opportunities. *Clean Technologies*, *4*(4), 1138–1151.

 https://doi.org/10.3390/cleantechnol4040069
- Wang, T., Lund, B. D., Marengo, A., Pagano, A., Mannuru, N. R., Teel, Z. A., & Pange, J. (2023). Exploring the Potential Impact of Artificial Intelligence (AI) on International Students in Higher Education:
 Generative AI, Chatbots, Analytics, and International Student Success. *Applied Sciences* (Switzerland), 13(11). https://doi.org/10.3390/app13116716