



Chapter 2

Erosion of Critical Academic Skills Due to AI Dependency Among Tertiary Students: A Path Analysis


John Paul P. Miranda

 <https://orcid.org/0000-0003-2059-972X>
*Don Honorio Ventura State University,
Philippines*


Maria Anna D. Cruz

 <https://orcid.org/0009-0007-3602-1507>
*Don Honorio Ventura State University,
Philippines*


Antonia B. Fernandez

 <https://orcid.org/0000-0002-1322-8333>
*Don Honorio Ventura State University,
Philippines*


Francis F. Balahadia

 <https://orcid.org/0000-0001-6666-4975>
Laguna State Polytechnic University, Philippines


Joey S. Aviles

 <https://orcid.org/0000-0002-7818-014X>
Angeles University Foundation, Philippines


Carisma A. Caro

 <https://orcid.org/0009-0005-5577-6679>
Holy Angel University, Philippines

Ivan G. Liwanag

 <https://orcid.org/0009-0005-0929-5583>
*Don Honorio Ventura State University,
Philippines*

Elizabeth P. Gaña

 <https://orcid.org/0009-0001-8248-4525>
*Don Honorio Ventura State University,
Philippines*

ABSTRACT

This chapter investigates the perceived erosion of critical academic skills among 745 university students due to dependency on AI tools. The survey measured six key constructs: AI Dependency (AID), Cognitive Offloading (CO), Motivational Decline (MD), Academic Skills Erosion (ASE), Academic Integrity Awareness (AIA), and External Pressures (EP), using a five-point Likert scale. Path Analysis was employed to examine the interrelationships among these constructs. The results revealed a strong positive relationship between AID and both CO and MD, which indicated that the increased reliance on AI leads to reduced cognitive engagement and diminished academic motivation. Additionally, CO and MD were positively associated with ASE, which means that students who offload cognitive tasks and

DOI: 10.4018/979-8-3373-0122-8.ch002

experience MD are more likely to exhibit deteriorating academic skills. While AIA had a weak negative relationship with AID, EP showed a moderate positive association and highlighted the role of academic stress in driving AI reliance.

INTRODUCTION

Artificial Intelligence (AI) has evolved from simple rule-based systems to sophisticated machine learning models, particularly deep learning. The widespread use of AI-driven tools such as ChatGPT, Grammarly, and Microsoft Copilot has reshaped how students approach academic work (Kelly, 2024). These tools streamline tasks like information retrieval, text generation, paraphrasing, and coding, improving accessibility and efficiency. However, growing dependency on AI raises pressing concerns about its impact on students' cognitive and academic development (Çela et al., 2024).

Despite the benefits of AI in education, its widespread adoption also presents significant challenges that warrant closer examination. AI is often portrayed as a solution to outdated pedagogical methods, but its educational applications present fundamental challenges (Hasanah et al., 2025; Izquierdo-Álvarez & Jimeno-Postigo, 2025). Rather than merely correlating AI use with skill erosion, it is necessary to investigate the ways AI might be undermining students' learning processes. Automating complex academic tasks can reduce the need for critical thinking and problem-solving, which can make students overly dependent on AI-generated solutions (Fan et al., 2024). Instead of fostering deeper engagement, AI tools may discourage students from actively processing information. Additionally, AI's increasing role in academic tasks raises concerns about whether it truly enhances learning or merely enables task completion with minimal cognitive effort (Basha, 2024).

These cognitive challenges intersect with ethical concerns surrounding AI-generated content (Acut et al., 2025), which challenges academic integrity. While AI's role in plagiarism is frequently cited, the ethical dilemmas extend beyond unauthorized content reproduction to issues of authorship, originality, and accountability (Bin-Nashwan et al., 2023; Perkins, 2023; Zhai et al., 2024). AI-generated content blurs the distinction between human and machine-produced work, challenging traditional understandings of intellectual contribution. Without clear ethical guidelines, students may, by chance, commit academic misconduct (Tang & Su, 2024). Educational institutions must address these gaps by establishing policies that emphasize transparency, fairness, and responsible AI usage (Afshan Bibi et al., 2024; Al-Zahrani, 2024).

Significantly, AI's impact on student motivation also requires further scrutiny. While some studies highlight its negative impact, such as decreased effort and engagement in problem-solving, AI can also enhance motivation by reducing frustration with difficult subjects (von Garrel & Mayer, 2024). AI tools can provide immediate support, boost confidence, and encourage students who struggle with conventional learning methods. However, easy access to AI-generated solutions can lead to disengagement, particularly when students bypass essential cognitive processes that are vital for skill acquisition. Understanding the conditions under which AI fosters motivation versus when it hinders effort is critical in evaluating its role in education (S. Huang et al., 2024).

Given these concerns, this study examines the extent to which AI dependency contributes to the erosion of critical academic skills among university students. Using path analysis, this research explores the relationship between AI dependency and key academic competencies to provide insights into how AI affects students' cognitive and academic development in higher education. By analyzing these dynamics,

22 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

www.igi-global.com/chapter/erosion-of-critical-academic-skills-due-to-ai-dependency-among-tertiary-students/379658

Related Content

AI Applications for Sustainable Development Goals

Siriyama Kanthi Herath, Dilka Savindi Sodigeand Duleesha Pahasarianie Kalupahanage (2025). *AI Strategies for Social Entrepreneurship and Sustainable Economic Development* (pp. 351-370).

www.irma-international.org/chapter/ai-applications-for-sustainable-development-goals/366895

Quantum Computing in Healthcare: A Review

N. Ambika (2024). *Applications and Principles of Quantum Computing* (pp. 320-335).

www.irma-international.org/chapter/quantum-computing-in-healthcare/338294

AI-Driven Classroom Management With Intelligent Tutoring Systems

Vijaya Lakshmi V., K. Syamala Devi, Swapna Raghunath, Jayashree S. Patiland M. Shanti (2025). *Driving Quality Education Through AI and Data Science* (pp. 259-282).

www.irma-international.org/chapter/ai-driven-classroom-management-with-intelligent-tutoring-systems/370083

Designing ELA Chatbots With a Simulation-Informed Process: A Practical Framework and Use Cases for Inclusive Literacy Instruction

Alicia M. Drelick, Casey Woodfieldand Justin E. Freedman (2026). *AI and Game-Based Literacy Learning: Innovative Pathways for Diverse Learners* (pp. 63-84).

www.irma-international.org/chapter/designing-ela-chatbots-with-a-simulation-informed-process/413357

Android Malware Detection Approach Using Stacked AutoEncoder and Convolutional Neural Networks

Brahami Menaouer, Abdallah El Hadj Mohamed Islemand Matta Nada (2023). *International Journal of Intelligent Information Technologies* (pp. 1-22).

www.irma-international.org/article/android-malware-detection-approach-using-stacked-autoencoder-and-convolutional-neural-networks/329956