

## **Abstract**

### **Developing a Sustainable AI Framework for Equitable Quality Education**

This study examines the role of Artificial Intelligence (AI) in advancing Sustainable Development Goal 4 (SDG 4) by integrating Universal Design for Learning (UDL), Design Thinking, and Agile principles. While prior research has explored AI's impact on education in isolation, this study investigates how these frameworks can be combined to create inclusive and adaptable learning environments.

The research highlights AI-driven adaptive learning technologies that personalize education, support human-led teaching, and enhance engagement. It also underscores the importance of culturally responsive AI models in promoting educational equity. While UDL's role in inclusive education is established, its alignment with Design Thinking for curriculum redesign and integration with Agile AI development remains underexplored.

AI-powered tutoring systems and personalized platforms demonstrate AI's potential to improve learning outcomes yet concerns around ethical AI use and accessibility persist. This study employs a mixed-methods approach using qualitative and quantitative analysis, including a systematic literature review, case study of AI-driven educational platforms, and expert interviews with educators and students. The study provides insights and recommendations for ethical AI integration. By embedding AI in sustainable education policies and leveraging UDL and Design Thinking in iterations, institutions can enhance learning quality while ensuring responsible AI adoption.