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## Strengthening Academic Integrity and Research Data Governance through AI-Enhanced Turnitin Integration in Moodle LMS: A Case Study of the University of Botswana

The rapid emergence of generative artificial intelligence has introduced complex challenges for academic integrity and research data reliability in higher education. At the University of Botswana, existing plagiarism detection infrastructure based on PlagScan proved insufficient, as it lacked the capability to detect AI-generated content, creating an evidentiary gap in addressing increasingly sophisticated student submissions. This paper presents a case study of the institutional implementation and administration of Turnitin integrated within the Moodle Learning Management System, with a focus on AI-detection and advanced similarity reporting. The project involved the optimization of system workflows alongside the design and delivery of targeted training programmes for both faculty and students, enabling effective interpretation of integrity reports and fostering ethical engagement with digital tools. This intervention replaced subjective assessment practices with objective, data-driven mechanisms for identifying academic misconduct. Findings indicate significant improvements in plagiarism detection, including the identification of AI-generated content, hidden text, and attempts to bypass detection through non-textual submissions. The integration has enhanced grading efficiency, strengthened compliance with institutional policies, and contributed to a reduction in the misuse of generative AI tools. Institutional analytics drawn from a user base of approximately 12,000 stakeholders demonstrate increased lecturer engagement with originality reports, improved turnaround times, and more consistent enforcement of academic integrity standards. The initiative benefits students, lecturers, researchers, administrators, and the University Integrity and Research Office by improving the quality, authenticity, and traceability of academic outputs. The study highlights the critical role of integrated digital systems in supporting research data governance and provides a scalable model for institutions responding to the challenges posed by AI-assisted content generation

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