

BEYOND THE GRADEBOOK: ASSESSING LARGE STUDENT COHORTS AND REIMAGINING THE FUTURE OF ASSESSMENT IN THE AGE OF AI

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SUBTHEME: Assessment

How do we uphold academic integrity and design meaningful assessments in an era where AI-generated text is increasingly difficult to distinguish from student-authored work? SCIE10005 *Today's Science, Tomorrow's World*, Australia's largest undergraduate science subject, has provided a unique opportunity to investigate these questions at scale. Since its launch in 2022, the subject has enrolled a total of over 13,000 students. Each year, the delivery is supported by 70 tutors and 25 academic staff in Semester 1, and 25 tutors and 15 academic staff in Semester 2.

We examined diverse datasets, including *Turnitin* AI detection and plagiarism scores, Learning Management System (LMS) engagement metrics, student reflections, feedback surveys, tutor evaluations, and assessment rubric data, to identify practical implications for large-scale assessment. We embedded AI-based learning activities into weekly workshops, supported by structured scaffolding and active tutor guidance. Responsible AI use in assessments was promoted through academic skills and library research tasks. Rubric-level analysis explored student performance across different types of assessment criteria, from factual explanation to those demanding originality and critical thinking. While *Turnitin* helped flag potential issues during assessments, a three-step manual review, by the grading tutor, senior tutor, and course coordinator, was essential for fair interpretation. Several patterns emerged across semesters and these insights continue to shape our approach to assessment design, workshop delivery, and tutor training in large cohorts.

We offer practical insights drawn from thousands of student assessments, supporting both academic integrity and broader learning experience. They contribute to the continuous improvement of reflective tasks, active learning activities, AI-integrated exercises, and group investigations. This work aligns with the need for thoughtful AI integration within LMS-supported systems (Alotaibi, 2024), and supports research advocating for ethical, equitable, and sustainable approaches to AI use in science education (Almasri, 2024; Kamalov, Santandreu Calonge & Gurrib, 2023). Our ongoing goal is to foster critical and reflective learning habits while developing assessment models that value the learning process as much as the final product.

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