PEDAGOGICAL INNOVATION THROUGH TECHNOLOGY-ENHANCED LEARNING DESIGN

GLOBAL CASE STUDIES AND IMPLICATIONS FOR PRACTICE

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Insights from a University Course

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Introduction

The contemporary higher education landscape is in the midst of a transformation, spurred by the twin engines of technological innovation and a pedagogical pivot towards student-centred learning paradigms. Central to this evolution is the concept of assessment, which is increasingly viewed not merely as a measurement tool but as an integral component of the learning process itself (Boud & Soler, 2016). Meylani (2024) argued that traditional assessment methods often rely on rote memorisation and standardised testing. These methods have faced scrutiny for their limited ability to gauge the complex competencies required in the 21st-century workplace, such as critical thinking, problem-solving, and collaboration (Darling-Hammond & Adamson, 2014). Educators have championed authentic assessment, a pedagogical approach that requires students to apply their knowledge and skills to authentic tasks and challenges (McArthur, 2023; Villarroel et al., 2018).

Authentic assessments are designed to mirror the complexities and ambiguities of professional life. In his earlier work, Wiggins (1990) suggested that students can engage in higher-order thinking through authentic assessments to produce a tangible, sound output or performance. These assessments foster deeper learning and better prepare students for their careers by bridging the gap between academic knowledge and practical application (Gulikers et al., 2004; Schultz et al., 2022). However, educators face significant challenges when they design and implement high-quality authentic assessments. Creating realistic scenarios, developing robust evaluation criteria, and providing personalised feedback can be time-consuming

and resource-intensive, particularly in large classes (Gravett, 2025; Quinlan et al., 2025).

Artificial intelligence (AI) emerges as a potentially transformative force at this intersection of pedagogical shift and practical constraint. The recent proliferation of AI tools, particularly generative AI models, offers unprecedented opportunities to revolutionise educational practices, including assessment design (Chuah & Sumintono, 2024; Matheis & John, 2024; Zawacki-Richter et al., 2019). AI can assist educators in generating diverse and complex assessment scenarios. It can also help create detailed rubrics and provide initial feedback (Xia et al., 2024). As AI manages these administrative tasks, instructors can focus more on the pedagogical aspects of their roles (Ouyang et al., 2022).

Although there is growing interest in using AI for assessment, there is still limited empirical research on how these technologies are used to design authentic assessments within technology-enhanced learning (TEL) environments (Powell & Forsyth, 2024). Much of the existing literature focuses on AI's potential benefits or challenges, often without detailed accounts from real classroom settings. As a result, there remains some uncertainty about how AI can be practically integrated into assessment processes to help mitigate long-standing challenges such as scalability, personalisation, and workload management. These challenges include scalability, personalisation, and maintaining pedagogical quality in higher education.

Therefore, this chapter reports findings from a study investigating the practical application. Situated in a blended learning course with 82 undergraduate students, this research explores the affordances and the obstacles of using AI-powered tools to create all course assessments. The core objective is to understand how AI can be leveraged to design tasks that align with learning outcomes and effectively cultivate students' critical thinking, creativity, and problem-solving abilities.

Literature Review

Integrating AI into educational assessment is a rapidly evolving field, drawing together research insights from authentic assessment, TEL, and AI applications in education. Building upon the theoretical framework of constructive alignment, this literature review synthesises key contributions from these domains. It offers a conceptual foundation that informs the current study.

Theoretical and Conceptual Framework

This study is grounded in the theoretical framework of constructive alignment as articulated by Biggs and Tang (2011). Constructive alignment emphasises the coherent integration of learning outcomes, teaching methods, and assessments. It argues that effective learning occurs when teaching activities and assessments are explicitly designed to align with the intended learning outcomes. Within this

framework, assessments are purposefully constructed to measure student learning and actively facilitate and support the learning process (Boud & Soler, 2016).

Central to this chapter, Authentic assessment aligns naturally with this theoretical stance by providing tasks that mirror complexities in various settings and require applying knowledge in practical contexts (Villarroel et al., 2018). The integration of AI into the design of authentic assessments is conceptualised here as a technological enhancement of constructive alignment. AI-generated tasks and assessment rubrics are purposefully developed to ensure congruence with explicit learning outcomes, deepening students' learning experiences through contextually relevant and cognitively challenging activities (Xia et al., 2024). In addition, this framework highlights the critical role of the educator, who ensures that AI-generated tasks remain pedagogically robust, ethically sound, and constructively aligned with intended educational objectives (Crompton & Burke, 2023).

The Principles and Values of Authentic Assessment

Authentic assessment is rooted in constructivist learning theory, which posits that learners construct their understanding and knowledge through experiences and interactions (Bruner, 1966). Authentic assessment extends this principle by arguing that evaluation should be seamlessly integrated with the learning process, focusing on meaningful and relevant tasks to the learner (Kandlbinder, 2025; Wiggins, 1998). Unlike traditional assessments that often test decontextualised knowledge, authentic assessments require students to "do" the subject, engaging in tasks that replicate the challenges and standards in the real world or the professional discipline (Sokhanvar et al., 2021).

Gulikers et al. (2004) identified five key dimensions of authentic assessment: the task, the physical context, the social context, the assessment result or form, and the criteria. An authentic task is typically ill-defined, complex, and requires students to apply a range of skills and knowledge over a sustained period. The context should mimic the environment where the knowledge would be used, whether a laboratory, a design studio, or a corporate boardroom. The result is a polished product or performance, rather than a simple score, and the evaluation criteria are transparent, based on professional standards (Gravett, 2025). These outputs are often developed collaboratively with students (Villarroel et al., 2018).

Authentic assessment has been widely recognised for its pedagogical value across disciplines. It promotes deeper learning by encouraging students to connect new information with existing knowledge and apply it meaningfully (Sambell et al., 2012). Studies have shown that authentic assessments positively correlate with increased student motivation, engagement, and satisfaction (Colthorpe et al., 2021). Furthermore, authentic assessment helps students develop transferable skills such as critical thinking, communication, and problem-solving, enhancing their