Deep Learning and Academic Performance Improvement Through Iterative Student-Academic Collaboration: Co-Creating and Refining MCQs

Sandy Sabapathy
The Hong Kong Polytechnic University, Hong Kong

Winnie Chiu
The Hong Kong Polytechnic University, Hong Kong

Annie Ko
The Hong Kong Polytechnic University, Hong Kong

Abstract

This paper explores how fostering deep learning through conceptual understanding, rather than rote memorization, improves the academic performance of non-law students required to study core law subjects. These students often underperform due to a mistaken reliance on memorization, which inhibits the development of critical skills like analytical and creative thinking. During the 2023/24 academic year, we addressed this through a pedagogical innovation: students and academics collaboratively designed multiple-choice questions (MCQs) in Company Law. This process required learners to dissect legal principles, identify common misconceptions (e.g., misunderstandings of director liabilities), and craft assessments rooted in their own conceptual challenges

Pre- and post-project surveys of 248 students revealed significant outcomes:

A 6% increase in students reporting strong conceptual understanding (83.5% to 89.5%),

A 9.3% rise in confidence for final exams (79.4% to 88.7%), and

A 15.3% surge in students attributing improved grades to the activity (69.4% to 84.7%).

These findings underscore the efficacy of collaborative learning strategies in improving academic outcomes.

This study has two objectives: First, it demonstrates that deep learning pedagogies bridge the gap between theoretical knowledge and application, directly improving academic performance. Second, it establishes that student-academic collaboration yields higher-quality MCQs by centering assessments on learners' persistent challenges. The findings highlight the value of pedagogical partnerships in promoting critical thinking, exam preparedness and academic success.