

INTERACTIVE BY DESIGN: ELEVATING STUDENT ENGAGEMENT

Rahini Ragavan^a, Monique Stoltz^a, Michael De Silva^a, Katelyn Mroczek^a, Elly Djouma^a, Ross O'Shea^a, Antony Vinh^a

Presenting Author: Rahini Ragavan (r.ragavan@latrobe.edu.au)

^aDepartment of Microbiology, Anatomy, Physiology and Pharmacology, La Trobe University, Bundoora Victoria 3086, Australia

KEYWORDS: Pharmacology, Interactive workbook, Pedagogy

SUBTHEME: Technology enhanced learning

BACKGROUND: Pharmacology is a core discipline in health education, requiring both conceptual understanding and critical thinking. Since 2022 at La Trobe University, pharmacology has been delivered primarily through online lecture recordings and face-to-face workshops via the subject PAM3PHA. Students achieved strong overall academic performance (mean final grade: B, >70%), yet the average final exam grade was notably lower at 58%. Engagement data revealed that only 25% of students accessed the recorded lectures. Variability in recordings, teaching style and reliance on passive learning methods may have contributed to this low engagement (Al-Zahrani, 2015). To address these challenges, in 2025, PAM3PHA was replaced by a new subject, PCY3001 which delivered the same content but with a more student-centered and interactive design. Lecture recordings were removed and replaced by a scaffolded digital workbook, practical classes, and interactive workshops aimed at enhancing cognitive engagement (Kahu, 2013). Three new assessments were introduced, while oral presentation and the final exam were retained.

AIMS: To evaluate the impact of replacing online lecture videos with an interactive LMS-based workbook on student engagement and learning experience in pharmacology education.

DESIGN AND METHODS: In PAM3PHA (2024), content was delivered via 3–4 short lecture videos (8–20 minutes each) and online “check your knowledge” activities using H5P tools (e.g., drag-and-drop, fill-in-the-blank, MCQs). In contrast, PCY3001 (Semester 1, 2025) adopted a mixed-modality approach. Lecture videos were replaced with concise online text, short (~2-minute) embedded videos, and interactive H5P activities - all optimized for mobile access. Scheduled weekly content was similar between both subjects. The total number of LMS links to videos, lecture notes or online learning material was also similar (PHA: 168 vs PCY: 176). Students engaged with the content asynchronously before attending in-person workshops and practicals, where learning was reinforced through collaborative activities. Data was collected using both qualitative and quantitative methods:

1) Student Survey: Administered in Week 8 via QuestionPro to assess preferences, satisfaction, accessibility, and perceptions of learning modalities. **2) Student Feedback Survey (SFS):** Thematic analysis to identify key insights into student experience. **3) Assessment Analysis:** Comparison of final exam results between PAM3PHA and PCY3001 to evaluate the impact of delivery changes. **4) engagement metrics:** LMS login frequency (accesses) used as a proxy for online engagement. Comparisons were made between the two subjects as both cohorts consisted of students studying the same courses and due to the content and assessments being mostly identical.

RESULTS: Sixty-five students completed the survey where 68% preferred the new PCY3001 LMS format, and 75% found it more engaging than lecture-based delivery. However, thematic analysis of short-answer responses revealed that 69% (45/65) still favored lecture videos, citing benefits such as flexibility, visual learning, and the ability to review content at their own pace. Engagement with LMS learning content (excluding admin and assessments) showed a total of 31196 accesses for PAM3PHA (177 per student), compared to 68701 for PCY3001 (654 per student). Despite higher accesses in PCY3001 compared to PAM3PHA, final exam results were similar in both cohorts (58% vs 56%, respectively), indicating that improved engagement may not correlate with improved grades. Further data analysis will be performed at completion of the subject (end of semester 1 2025).

SUMMARY: Interactive student-centered approaches enhanced engagement which did not translate to enhanced student performance. Disparate results from the survey highlight the difficulties in interpreting student perceptions via surveys alone.

REFERENCES

- Al-Zahrani, A. M. (2015). From passive to active: The impact of the flipped classroom through social learning platforms on higher education students' creative thinking. *British Journal of Educational Technology*, 46(6), 1133–1148.
- Kahu, E. R. (2013). Framing student engagement in higher education. *Studies in Higher Education*, 38(5), 758–773.

Proceedings of the Australian Conference on Science and Mathematics Education, The University of Melbourne, 30 September - 2 October 2025, page 64, ISSN Number 2653-0481.