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The Future is Connection:

Collaboration, Creativity and Compassion in a Digital Society

Compassionate AI by design: Reconnecting students with learning through course-tailored AI

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Generative artificial intelligence is becoming part of students' everyday study practices, yet institutional debate still tends to position it as either an efficiency tool or an academic-integrity threat. This binary framing obscures a more educationally useful question: can AI be designed to help students engage meaningfully with difficult concepts while helping educators see where understanding breaks down? This project evaluates a course-tailored AI learning assistant embedded in a large undergraduate course at an Australian public university. The tool was bounded to authoritative course materials and instructor-provided resources. Students could ask questions, receive course-grounded answers and explanations, and clarify or organise their understanding without having assessed tasks completed for them. Informed by self-determination theory and cognitive load theory, the design sought to support competence and autonomy, reduce unnecessary cognitive burden, and provide low-stakes help at the moment of uncertainty (Ryan & Deci, 2000; Sweller, 1988). Students were randomly assigned either access to the tool or standard course resources.

Evaluation drew on complementary sources of evidence gathered across the teaching period, combining students' own accounts of their experience with routinely captured indicators of engagement and achievement. The evidence points in a consistent direction. Students with access reported a more positive orientation towards their study and towards the responsible institutional use of AI. Their engagement shifted in character rather than in volume, suggesting sustained attention to core course materials rather than a general increase in undifferentiated digital activity. Indications for achievement were encouraging, particularly for students at greater risk of not succeeding, although the strength of these signals varied.

An equally important feature lay in the questions themselves. Patterns in students' questions made recurring misconceptions and points of uncertainty more visible to the educator. This supported more responsive teaching: explanations, examples, and follow-up support could be focused on what students were actually struggling to understand. The initiative therefore created a two-way pedagogical feedback loop. Students received immediate, course-aligned support for working through concepts, while the educator gained diagnostic insight into learning needs not always visible in conventional analytics or classroom participation.

The project locates compassion in the design choices, not in the technology itself. Course alignment, bounded assistance, student choice, and attention to digital burden offer a way for AI to support conceptual engagement without displacing core resources or student agency (Burr et al., 2020; Holmes et al., 2022). The resulting principles are to ground AI in authoritative course materials, preserve the integrity of assessed work, enable low-stakes questioning, use question patterns to inform teaching, and evaluate wellbeing alongside engagement and achievement. These principles are applicable across disciplines and tertiary contexts.

Keywords: generative AI, compassionate technology, human-centred learning design, conceptual engagement, responsive teaching, randomised controlled trial

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