RUN LEARNING AND TEACHING AWARDS 2025

Name: Dr Derek Long

Institution: University of Southern Queensland

Title: Redefining programming education for agricultural students using Generative AI

Abstract: Within UniSQ's AgTech degree, students have software-based courses looking at sensors, instrumentation, and smart data farming, and Generative AI (GenAI) has allowed us to reimagine programming education for these students. Using GenAI in software development has become industry standard for developers, and we have sought to teach those skills in addition to traditional programming fundamentals by integrating GenAI into the courses as a personal tutor and coding assistant.

Our intervention drew from Puentedura's SAMR framework with Vygotsky's zone of proximal development to progressively unlock the potential of GenAI when working with microcontrollers, weather stations, tractor data logs, and machine learning datasets. By the end of the journey, students are extending themselves to tackle tasks that are relatively complex for their skill level and would not have been possible without the assistance of GenAI.

The impact of the integration of GenAI is that it has driven a 20% increase in course satisfaction and removed the barrier of entry to students with an agricultural background who were intimidated at writing code, and allowed students to tackle more complex, more authentic, and more engaging assessment tasks that have prepared students to contribute to Australia's journey towards precision agriculture.