Sustained Excellence in Tertiary Teaching General Category

Andrew Luxton-Reilly

Associate Professor
School of Computer Science
The University of Auckland

"For me, excellent teaching is about sharing my passion for computing, stimulating curiosity and conveying to students why Computer Science matters through its enormous capacity to improve the world."

Andrew Luxton-Reilly's slightly unusual pathway to teaching computer science (CS) led him to become an outstanding teaching force at The University of Auckland and beyond. As an undergraduate studying an eclectic range of subjects, he failed several courses due to poor study habits. But, through his BA and MA (Hons) in Philosophy, he became more interested in contributing to society and thinking critically about the influence of ideas on society. He also completed a BSc in Computer Science and, in 1994, while completing his MA, joined the Computer Science Department, now the School of Computer Science (SoCS), as a teaching assistant. He became a Tutor, then a Senior Tutor and, after completing a PhD, shifted to a more traditional research and teaching role as a Senior Lecturer.

Over his 24-year career, Andrew has taught high school students, adults engaged in continuing education, undergraduates and graduates, with class numbers ranging from three to 850. He has supervised 10 PhD, seven Masters and 50 Honours students. He has been awarded 10 University learning and teaching grants for innovative approaches to teaching and learning which have helped support the refinement and evaluation of peer learning systems such as PeerWise and Aropä that are now widely used by an international audience.

Excellent teaching goes hand-in-hand with enjoyable learning.

Andrew says excellent teaching is about sharing his passion for computing, stimulating curiosity and conveying to students why CS matters through its considerable capacity to improve the world. He aims to help students learn effectively, be self-reflective about content knowledge and professional behaviour, and be aware of the connections between the digital world and the social world.

He believes computing educators should take a holistic view of the discipline and ensure students are connected to people and society. As the technology they develop has a profound effect on our future, they should be able to communicate effectively and have an appreciation of ethics and social justice. The two main principles that underpin Andrew's teaching practice are scaffolding the acquisition of knowledge and basing his teaching on a continuous cycle of research-informed, critical reflection.

As CS is highly technical, precise, and rapidly changing, students have to develop a wide range of competencies, especially as they have differing levels of prior experience. Andrew also ensures students are aware of gender equity issues, bias, negative stereotypes, and perceptions of identity. He acknowledges the discipline is plagued by negative

stereotypes and implicit bias. (CS has the worst gender equity of any subject, with less than 20 percent of CS students being women).

Andrew's main aim is to motivate his students, believing they learn best when they are actively seeking knowledge rather than 'jumping through hoops'. He regularly promotes engagement through activities involving peer learning, which improves social interaction and communication skills and gives students the opportunity for immediate feedback. He also motivates curiosity by provoking cognitive dissonance, such as using an example that demonstrates the potential social impact of choosing an inefficient algorithm.

Andrew empathises with students' personal situations and seeks insight into the academic difficulties they encounter in order to offer pastoral care and answer their questions. During his career he has been Enrolment Advisor for eight years and International Student Welfare officer for six years, as well as participating in Girls into Science for four years and the Student Support Group for 16 years.

He also encourages students to appreciate the ethical and professional issues arising in programming careers and has perfected a cycle of feedback, reflection and improvement – with obvious success. Previously reluctant students asked to write 200 words on ethics and professionalism started submitting 2,000 words.

Andrew began using the world-wide web in 1996, when it was less than two years old and has been an early adopter of many, now standard, technologies such as wikis, forums, blogs, and video-recorded lessons. These technologies enable collaborative learning approaches to be applied in large classes and one student collaborative exercise using a wiki produced a chapter of an online textbook that provided resource material for future students.

Andrew values feedback from students and colleagues when developing and redesigning course content and curricula. After co-authoring a course textbook and introducing an automated and timely feedback system – *CodeRunner* – he helped restructure the University's BSc into a new Bachelor of Advanced Science (Honours) degree in 2016–2017.

Andrew mentors colleagues and has developed a handbook and mentoring programme for CS Tutors. He initiated a bi-weekly Teaching and Learning in Computer Science seminar series and established an expectation of teacher peer observation within the SoCS to better share and disseminate teaching practices between staff. He delivers seminars and workshops widely, as well as contributing to school holiday programmes and courses for adult students.

He has participated in more than 40 professional development workshops on teaching and learning, attended 20 International conferences on CS Education, completed the University's Postgraduate Certificate in Academic Practice, and was awarded a CLeaR Fellowship in 2014. He received a Faculty of Science Teaching Excellence Award, followed by a University of Auckland Teaching Excellence Award in 2018. His scholarly approach has resulted in more than 80 published academic papers about learning and teaching, including seven award-winning papers, and he leads a Computing Education and Learning Technology Group that meets weekly.

"In 2016 I received a Best Presentation award for the paper 'Learning to Program is Easy' at the ACM SIGCSE International Conference on Innovation and Technology in Computer Science Education for challenging the prevailing CS community view that it is difficult to learn programming."