

Technology-Enabled Learning Grants Round 2, 2014 Winners (projects commencing January 2015)

Award: Innovation Project

Faculty: Science

School: Mathematics & Physics

Investigators: **Michael Jennings and Gwen Lawrie**

Project Title: An innovative, open-access online question and solution generator

Duration: 1 year

Funding: \$99,000

Abstract: SmartAss system (Smart Assignments) is an innovative, open-access online question and solution generator, and provides students with a mechanism for concentrating on those concepts which cause them difficulties, enabling inquiry-based learning and improving their technical and creative abilities. Smartass' uniqueness is in the accompanying fully worked solutions. One simple click of a button gives the student a detailed step-by-step solution, along with written comments to guide students in their learning. This project will update and extend the current SmartAss system, adding content from four other large first and second-year courses. The interface will also be considerably revamped, allowing students to self-diagnose their areas of weakness and pursue self-directed learning.

Award: Innovation Project

Faculty: Science

School: Mathematics & Physics

Investigators: **Michael Drinkwater and Matthew Davis**

Project Title: Enhancing student buy-in: pre-reading and feedback in the flipped classroom

Duration: 1 year

Funding: \$100,000

Abstract: An essential element of implementing effective active learning strategies in large classes is to ensure that students come to class prepared to learn. One way to achieve this is to assign pre-reading, and require students to complete an assessed reading quiz beforehand. Making this a short-answer quiz (rather than multi-choice) based on concepts requires students to effectively engage with the material. One of the challenges is in marking these quizzes and providing useful feedback to hundreds of students. Providing feedback and incorporating student

responses into class greatly enhances student engagement with the course. This project will rewrite prototype UQ-developed software used to analyse quiz data for PHYS1001 which currently has limitations and no maintenance support. The project will develop additional usability features that will dramatically reduce the time required to perform the marking, and will significantly increase the amount and timeliness of personalized feedback to students. The software will be generalized and made sustainable into the future and interfaced with Learning Management Systems to allow for UQ-wide rollout and available to other teaching institutions.

Award:	Innovation Project
Faculty:	Science
School:	Chemistry & Molecular Biosciences
Investigators:	Gwen Lawrie, Susan Rowland, James de Vos, Lawrie Gahan, Joanne Blanchfield, and Philip Sharpe
Project Title:	Online, virtual and adaptive learning environments: improving the journey through large first year chemistry courses
Duration:	1 year
Funding:	\$99,900
Abstract:	<p>In 2014, students from 38 separate programs and every UQ faculty experienced at least one of the five first year chemistry courses in the School of Chemistry & Molecular Biosciences. Enrolment across the five courses ranged from 320 to 1540 students, with CHEM1100 (Chemistry 1) being the largest Semester 1 course at UQ. This scale, along the diversity of our students' needs and the complexity of timetabling, means that the traditional on-campus learning experience (lectures and PASS tutorials) do not always serve UQ students' learning in the best way possible. This project will adopt technology-enhanced learning to introduce new learning activities that both improve student access to resources and achieve improved curricular progressions through our courses. Three pedagogical strategies are proposed: (i) the delivery of interactive, self-contained, online learning modules which will complement or substitute for existing lecture activities; (ii) the weaving of these two modules into a new, hybrid, blended-learning Summer semester offering of CHEM1200 (Chemistry 2); and (iii) the introduction of virtual peer assisted study sessions (iPASS) for all of our first-year CHEM courses so that students can opt into online tutorial help instead of the current on-campus delivery.</p>

Award: Signature Project

Faculty: Humanities & Social Sciences

Investigators: **Julie Duck, Kelly Matthews, Peter Adams, Lydia Kavanagh, and Dominic McGrath**

Project Title: The Teaching @UQ Program

Duration: 2 years

Funding: \$295,200

Abstract: This project, designed and operated as a collaborative partnership between faculties and ITaLI – will develop the Teaching@UQ Program, a technology-enhanced professional development program to foster teaching excellence and ensure a high quality student experience. The measures of success of the project are: (i) a program that explicitly models effective hybrid learning practices that seamlessly incorporate technology-enhanced learning with active face-to-face sessions; (ii) collaboration between faculties and ITaLI, with faculty and school buy-in to design, develop and implement the program with ongoing coordination for Teaching@UQ as core business for ITaLI; (iii) policy recommendations that see Teaching@UQ expected for review, confirmation and promotion; and most importantly, (iv) an increase in the preparedness and confidence of new teaching academics with positive student satisfaction flow-on effects.

Award: Signature Project

Faculty: Institute for Teaching & Learning Innovation

Investigator: **Mathew Hillier**

Project Title: e-Exams for high stakes assessment at UQ

Duration: 2 years

Funding: \$280,000

Abstract: This project will establish the pedagogical, procedural and technical infrastructure that will facilitate a transition at UQ into technology enhanced high stakes assessment. This will enable a greatly expanded pedagogical landscape in the exam room. This project will make a QQ-wide impact, and will recognize that computerized examinations will take different forms and be suitable to varying degree in each discipline area.

Award: Signature Project

Faculty: Health & Behavioural Sciences

School: Dentistry

Investigators: **Pauline Ford, Sandra March, Jessica Tsai, and Anne Gilmore**

Project Title: Virtual patients create a virtuous cycle of learning in a dental curriculum

Duration: 2.5 years

Funding: \$190,000

Abstract: This project will address a critical need to integrate the foundation sciences within the clinical components of the UQ dental program, and to make learning more enjoyable and effective. The new BSc(Hons) course program at UQ is commencing in 2015 and the first two years of the new curriculum will be developed as part of the project. The enquiry-based curriculum will be scaffolded upon virtual patients (VPs) who will form the core for each year of the programs, and from all other learning activities and assessment will stem. An integrated assessment and feedback strategy will be developed to enable ongoing virtuous cycles of learning. UQ has partnered with the dental schools at the University of Adelaide and the International Medical University to allow benchmarking and to establish a consortium and bank of discipline specific resources.

Award: Signature Project

Faculty: Science

School: Chemistry & Molecular Biosciences

Investigators: **Susan Rowland, Joan Leach, Kay Colthorpe, and Louise Kuchel**

Project Title: CLIPS: Communication learning in practice for scientists

Duration: 2 years

Funding: \$192,475

Abstract: This project will develop online modules that allow students to interactively learn, revise and master core components of science-focused communication. CLIPS will host annotated examples of work, academic-provided explanations of "how to" do communication tasks, and explanations of what we look for when we mark student work. Students will be able to practice marking exemplar pieces and compare their marking to that of an expert – they can use CLIPS to develop a robust understanding of expected standards. To develop CLIPS the project will engage and support significant numbers of UQ science academics to share practice and specifically articulate their assessment expectations around key science communication activities. CLIPS will also have a "back end" for academics that contains communal resources.

Award: Signature Project

Faculty: Engineering, Architecture & Information Technology

School: Chemical Engineering

Investigators: **Ian Cameron, Peter Sutton, Sarah Roberts-Thomson, Geoffrey Marks, Deborah Brown, Caroline Crosthwaite, Kim Bryceson, and Greg Birkett**

Project Title: TheJourneyMaker: Enhancing curriculum design, program analytics and the student experience

Duration: 2 years

Funding: \$303,000

Abstract: This project will address the longer term, whole-of-program timescale related to efficient and effective curriculum design – a significant challenge in higher education (Hicks 2007). It will build on recent EAIT Faculty work that led to the prototype curriculum design environment named TheJourneyMaker. This holistic design and visualization tool (theVisualJourney) will be moved into a web-based tool easily accessible across all faculties. It will provide features and functionality that allow users to describe the learning pathways in terms of development and knowledge, skills, and personal attributes, and permit advanced visualization: hence TheJourneyMaker title. It will enable the automated generation of course and program profiles.

Award: Signature Project

Faculty: Engineering, Architecture & Information Technology

School: Architecture

Investigators: **Christine Landorf, Michael Dickson, Timothy O'Rourke, Kelly Greenop, and Peter Skinner**

Project Title: Developing an integrated 5-dimensional technology learning experience for architecture students

Duration: 2 years

Funding: \$100,000

Abstract: The aim of this project is to utilize new pedagogical approaches and educational technologies to address problems associated with the provision of engaging and realistic learning experiences in architectural technology. It will develop digital resources and integrated online learning activities to support a consistent and sequential learning experience across nine core courses that comprise the Architectural Technology subject stream. It will also develop two new Masters-level elective courses in the emerging areas of building information modelling (BIM) and mobile 3-dimensional laser scanning. Lastly, it will build technical

capacity and effective pedagogical practice amongst the technology teaching team within the Architecture program.