

Centre for eLearning Innovations
and Partnerships in Science and
Engineering (eLIPSE)

School of Mechanical and Mining
Engineering

ANNUAL REPORT

2018

Supporting discipline experts to lead eLearning innovation

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About eLIPSE

INTRODUCTION

The Centre for eLearning Innovations and Partnerships in Science and Engineering (eLIPSE) provides software development services and technical support/maintenance services for bespoke eLearning technologies that originate from the needs of the students and the inventiveness of academics in the Faculties of Engineering, Architecture and Information Technology (EAIT) and Science. In 2018 eLIPSE entered its fourth year of operation, partially funded by payment for software development services by academic staff who had successfully applied for Teaching and Learning Grants (T&L) and partially supported by direct funding contributions for tools maintenance/support from the two stakeholder faculties.

Over the four years of development work, eLIPSE has created from scratch, or inherited from academics and adapted for online use, a portfolio of 23 tools, which are now supported by eLIPSE developers. Details for these tools are contained in the *Appendix – eLIPSE Tools*.

On 6 September 2018, the University of Queensland (UQ) Senate approved a revised policy on the *Establishment, Management and Closure of Institutes, Centres and Research Networks*. Under the provisions of the new policy, eLIPSE can no longer be classified as a centre, necessitating an organisational status review before the end of the designated two-year transition period from the date of approval of the new version of the policy. As a result, the stakeholders in the Centre began discussions on its future structure, operations, funding and organisational location in November. The eLIPSE Advisory Panel determined that eLIPSE must transition to become some form of co-faculty unit and the Panel took carriage of this process which will be ongoing into 2019.

2018 also saw the resignation from UQ of the founding Director of the Centre, Associate Professor Carl Reidsema, effective 21 December. His vision established a unit which ensures that eLearning development is led by academic staff and underpins, rather than drives, the pedagogical imperative.

Pursuit of a commercial footing for some eLIPSE tools was abandoned as provision of support for a growing portfolio of tools had to be prioritised. It was decided that, if commercialisation were to be pursued properly, an additional appointment would be required.

GOVERNANCE

eLIPSE Advisory Panel

The Centre's directions and progress are advised on and evaluated by the eLIPSE Advisory Panel. Membership of the Advisory Panel in 2018 was as follows.

Executive Dean, Faculty of EAIT (Chair)	Professor Vicki Chen
Representative, Executive Dean, Faculty of Science	Professor Michael Drinkwater, Associate Dean (Academic), Faculty of Science
Director, eLIPSE Centre	Associate Professor Carl Reidsema, Faculty of EAIT/School of Mechanical and Mining Engineering
Pro-Vice-Chancellor, Teaching and Learning	Professor Doune Macdonald, Pro-Vice-Chancellor, Teaching and Learning
Chief Information Officer	Mr Rob Moffatt AM, Chief Information Officer, Information Technology Services
Academic staff member nominated by the Chair and the PVC (T&L).	Professor Ross McAree, Head, School of Mechanical and Mining Engineering

The Panel met once, on 2 November December, its first meeting chaired by the new Executive Dean of EAIT, Professor Vicki Chen. The future status of eLIPSE was the primary matter for discussion.

eLIPSE Leadership Team

In 2018, the eLIPSE Leadership Team, which oversees the operations of the Centre and discusses strategy, saw representation of Information Technology Services (ITS) settled on the Division's Manager, Application Development and Support following the departure of the Division's Deputy Director, Applications Delivery and Support. The ITS Technical Coordinator (see page 4 for details of the position) also attended meetings between 6 June and 31 December.

Representation of the Institute for Teaching and Learning Innovation (ITaLI) was formalised by the nomination of the Institute's new Deputy Director, Digital Learning, as its representative.

About eLIPSE

The Leadership Team met 18 times throughout the year. Membership of the eLIPSE Leadership Team in 2018 was as follows.

Director, eLIPSE Centre (Chair)	Associate Professor Carl Reidsema, Faculty of EAIT/School of Mechanical and Mining Engineering
Program Director, Research Excellence, eLIPSE	Associate Professor Lydia Kavanagh, Director, First Year Engineering, Faculty of EAIT/Deputy Associate Dean Academic (Curriculum Design & Teaching Innovation), Faculty of Science
Program Director, Technology, Tools and Learning Analytics, eLIPSE	Associate Professor Peter Sutton, Associate Dean (Academic), Faculty of EAIT/School of ITEE
eLIPSE Software Development Manager	Mr Phil Waller
Educational Design Professionals	Ms Anna Morris, Senior Educational Designer, Faculty of EAIT (until 27 February 2018, vacant thereafter) Ms Marnie Holt, Educational Designer, Faculty of Science
Representative, ITaLI	Dr Greg Winslett, Deputy Director (Digital Learning) (from 20 November 2018, vacant prior)
Representative, ITS	Ms Jodi Philips, Deputy Director, Applications Delivery and Support, ITS (departed May 2018) Mr Richard Rerrie, Manager, Applications Development and Support, ITS (from May 2018)

The Centre is a school-level centre in the School of Mechanical and Mining Engineering pending transition to its new status.

eLIPSE Achievements

PROJECTS OVERVIEW

The projects completed during 2018 were Data Rich Scenarios and TeamAnneal.

Development work was undertaken on Architecture 4D for Kingston University in the UK, Balance of Nature – Deep Concepts, My Courses and Semant/eLIPSE Platypus (Stages 2 and 3).

eLIPSE Platypus was adapted to replace the Reflection tool, which was retired from use, and modifications were made to the eLIPSE Student Dashboard.

Work on the Learning Pathway upgrade progressed to proof-of-concept stage and is currently suspended pending decisions at a higher level on wider deployment and support for the Learning Pathway in the University.

Ongoing support and maintenance was provided for completed tools, under the provisions of the grant of strategic funding from the faculties.

Details for all tools under development and under maintenance, including their pedagogical benefits, are contained in the *Appendix – eLIPSE Tools*.

HIGHLIGHTS 2018

1. Relationships with ITS

eLIPSE's role as a bridge between academics and ITS was bolstered in 2018 by the appointment by ITS of a specialist Technical Coordinator, Mr Jack Mason, for the period 14 May to 31 December. This position became a key liaison between eLIPSE and ITS, pursuing the translation of new technologies for use across the University. Jack assisted with assessment of the feasibility of new projects and provision of advice for best practice development and support arising from eLIPSE's user requirements within the context of UQ's enterprise architecture.

Business cases related to the Learning Pathway, Help!, and theJourneyMaker (tJM) were prepared by the Technical Coordinator for submission to the Deputy Vice-Chancellor

(Academic) as one of a number of proposals for ITS projects to be given consideration for central support. The aim of these business cases was to enable the move to UQ-wide adoption to improve the student experience across all faculties. This would require ITS to manage and host the application, while documentation/education and user support would be provided by the UQ eLearning team.

The secondary goal of this project was to promote UQ as innovators and creators of change, both internally and externally to the University.

2. T&L Grant Applications

The eLIPSE Software Development Manager, Mr Phil Waller, took on a greater role in consulting to academics on potential projects with eLearning elements during their preparation of grant applications for Teaching and Learning (T&L) funding. This work was undertaken in collaborative partnership with the educational designer teams in the Faculties of EAIT and Science and covered –

- evaluation of off-the-shelf solutions,
- exploring synergies with other projects (existing and potential) that might be exploited to save time and deliver better outcomes,
- examining what devices/infrastructure the technology would require,
- examining compliance with data storage and management provisions with UQ standards,
- examining the types of user interfaces required for students and staff to access the technology, and
- assessing the extent of budget requirements for development, testing, deployment, and operation.

Software development advice was provided immaterial of whether a project required eLIPSE services and was also provided for academics in faculties other than EAIT and Science.

3. Staff Transitions

From 3 April, Associate Professor Lydia Kavanagh was appointed to the part-time role of Deputy Associate Dean Academic (Curriculum Design and Teaching Innovation) in the Faculty of Science, a position which she holds in addition to duties in the Faculty of EAIT and eLIPSE.

Lydia also successfully navigated the rigours of the UQ professorial promotion process during 2018 and secured promotion to Professor, effective 1 January 2019. The promotion was a first based on scholarship and leadership of teaching and learning via the internal promotion process (as opposed to winning an externally advertised position) for a female engineering academic at UQ.

The training afforded eLIPSE developers, working in an agile environment on bespoke projects, has stood them in good stead in their career advancement. From mid-February, Student Developer, Roy Portas, undertook an industry placement for Semester 1 as part of his BE(Hons)/ME and secured a permanent position with the company, which he took up upon graduation at the end of the year. Graduate Web Applications Developers, Nich Achilles and James Li, secured well-paid positions in external organisations on the basis of their experience in eLIPSE.

OTHER ELIPSE ACTIVITIES

Other outputs and achievements for the Centre for 2018 included the following.

Research

Publications

Dokhanchi, Mohsen, Kavanagh, Lydia and Carl Reidsema (2018). *Factors that influence peer learning in social media enhanced engineering courses*. AAEE2018 Conference. 29th Australasian Association for Engineering Education Conference, Hamilton, New Zealand, 9-12 December.

Fleming, Melanie, Kavanagh, Lydia, Reidsema, Carl, Waris, Ahsin, Lee, Misha, Liu, Siyu and Kara-Manning, Ruben (2018). *Students as partners: developing a dialogue for change*. AAEE2018 Conference. 29th Australasian Association for Engineering Education Conference, Hamilton, New Zealand, 9-12 December.

Fleming, Melanie, Riveros, Pablo, Reidsema, Carl and Achilles, Nicholas (2018). *Streamlining student course requests using chatbots*. AAEE2018 Conference. 29th Australasian Association for Engineering Education Conference, Hamilton, New Zealand, 9-12 December.

Potts, Boyd A., Khosravi, Hassan and Reidsema, Carl (2018). *Reciprocal content recommendation for peer learning study sessions*. International Conference on Artificial Intelligence in Education, London, United Kingdom, 27-30 June 2018.

Potts, Boyd A., Khosravi, Hassan, Reidsema, Carl, Bakharia, Aneesha, Belonogoff, Mark and Fleming, Melanie (2018). *Reciprocal peer recommendation for learning purposes*. 8th International Conference on Learning Analytics and Knowledge, Sydney, New South Wales, Australia, 7-9 March 2018.

Invited keynotes/presentations

Reidsema, Carl and Kavanagh, Lydia. Workshop, *How to Flip a Classroom and Land on your Feet*, University of New South Wales. 19 July.

Kavanagh, Lydia. Keynote for sessional staff on first year/ STEM disciplines and engaging students with active, collaborative learning activities as well as facilitating a workshop on teamwork for the *Sessional Development Day*, Sunshine Coast University. 11 August.

Academic-led projects

eLIPSE contributed services to the following Teaching Innovation Grants projects throughout the year.

Drinkwater, M., Davis, M., Birkett, G., Howes, T., Singh, S. *Increasing student engagement in active learning through feedback on pre-reading quizzes*. UQ Teaching Innovation Grant. \$119,200 over 1+ years (continuing).

Kavanagh, L., Duck, J., Adams, P., Gannaway, D., McGrath, D., Copley, J. *TeachingPlus@UQ: Developing professional practice to enhance the student experience*. UQ Teaching Innovation Grant. \$165,000 over 2 years (continuing).

Lawrie, G., Kavanagh, L., Wheatley, V., Waller, P., Kartsonaki, E., Sharpe, P. *Developing authentic online assessment to support collaborative explanation and critical reasoning in large classes*. UQ Teaching Innovation Grant \$133,110 over 1.5 years (new).

Sutton, P., Kavanagh, L. *TeamAnneal Stage Two – A Web Service for Purposeful Student Team Creation*. UQ Teaching Innovation Grant. \$76,281 over 1 year (continuing).

Walker, S., Kavanagh, L., Mathieson, I. *A computer adaptive testing (CAT) platform for discipline-specific, English language screening tests to identify linguistically at-risk students*. UQ Teaching Innovation Grant \$47,000 over 1.5 years (new involvement for eLIPSE).

eLIPSE also contributed to the following projects funded by Faculty T&L Committees:

David, M., Wegener, M., Drinkwater, M., McIntyre, T., Corney, J., Birkett, G., Howes, T., Singh, S., Waller, P., Maheshwari, S., Sheppard, K. *Technology-assisted peer feedback for improved preparation and engagement in active learning*. Faculty of Science Teaching and Learning Grant \$57,106 over 1 year (new).

Henning, J., Bulmer, M., Muellner, U., Muellner, P., Waller, P. *Data-Rich Scenarios - Interactive Learning for Epidemiology, Statistics and Public Health*. Faculty of Science Teaching and Learning Grant \$40,000 over 1 year (new).

Holt, M., Vallely, E. *Shared resources – Faculty Learning Resources repository*. Faculty of Science Teaching and Learning Grant \$30,000 over 1 year (new).

Reidsema, C., Kavanagh, L., Hall, S. *Student-led observation for course improvement (SLOCI)*. Faculty of EAIT Teaching and Learning Grant \$59,357 over 1.5 years

Sutton, P., *EAIT “My Courses” Web Site for Course Coordinators*. Faculty of EAIT Teaching and Learning Grant \$39,902 over 1 year (new).

Walter, G., Furlong, M., Kuchel, L. *Developing understanding of deep concepts and the process of science - guidance in confronting understanding and a diverse literature*. Faculty of Science Teaching and Learning Grant \$25,000 over 1 year (new).

Presentations

At the eLIPSE Showcase for Faculty of Science staff at the St Lucia Campus, eLIPSE tools demonstrated by Science academics/eLIPSE staff were ChemHub, Learning Pathway, Semant, MOOCchat, TeamAnneal. 5 June.

The eLIPSE development team travelled to the Gatton campus to deliver a similar demonstration to Faculty of Science staff at that site. 7 June.

Students

The following students were undertaking projects associated with eLIPSE in 2018:

New students

M Computer Science (Management) student: Ramdas Ramani

M Engineering Science student: Wua Fong Tan

M Engineering Science (Management) students: Zeyu Li, Yifei Liang.

M Information Technology student: Shunan Ding

Continuing students

PhD students: Shaun Chen (Mechanical), Mohsen Dokhanchi (Mechanical)

M Phil student: Boyd Potts , supervised jointly with ITaLI

M Information Technology student: Sarah Nizami

B Engineering (Honours) student: Deryk Jun Wei Yeo (Electrical and Computer Engineering)

Financial Summary

Financial Summary

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<u>Income</u>	
Internal Grants won by eLIPSE Staff	131,983
Faculty Allocations	364,521
Fee for Service – eLIPSE Projects	329,164
TOTAL INCOME	825,668
 <u>Expenditure</u>	
Salaries – Developers	538,132
Salaries – Research Staff	78,260
Salaries – Project/User Support Staff	125,497
Salaries – Administration	52,167
Workshops, General Operating Expenses	4,810
TOTAL EXPENDITURE	798,866
 OPERATING SURPLUS/DEFICIT	 26,802

Note: \$19,298 of the surplus comprises unspent funds for an eLIPSE internal grant, which have been carried forward into 2019.

Staffing

The following people were employed by, or affiliated *ex officio* with, the Centre in 2018.

AFFILIATED STAFF

Centre Director, Carl Reidsema, Faculty of EAIT/School of Mechanical and Mining Engineering (departed 21 December, 2018)

Program Director (Research Excellence), Lydia Kavanagh, Faculty of EAIT

Program Director (Technology, Tools and Learning Analytics), Peter Sutton, Faculty of EAIT/School of Information Technology and Electrical Engineering

Senior Educational Designer, Anna Morris, Faculty of EAIT (departed 27 February 2018)

Educational Designer, Marnie Holt, Faculty of Science

Technical Coordinator, ITS, Jack Mason, (from 14 May to 31 December)

CENTRE EMPLOYEES

Software Development Manager	Phil Waller
Web Applications Developer	Sandesh Maheshwari
Web Applications Developer	Elliot Ritchie (commenced 3 December)
Graduate Web Applications Developer	Nicholas Achilles (departed 5 May)
Graduate Web Applications Developer	Callum Buckmaster (departed 21 December)
Graduate Web Applications Developer	James Li (departed 20 July)
Graduate Web Applications Developer	Anant Tuli (upgraded from Student Developer from 19 July)
Student Developer (casual)	Sophia Hooton
Student Developer (casual)	John Nguyen

Staffing

Student Developer (casual)

Roy Portas (departed 12 January)

Student Developer (casual)

Diego Robles Guerrero (moved to ITaLI 5 March)

Research Data Analyst

Christopher Shadforth (commenced 19 March)

Centre Administrator (casual)

Ellen Juhasz

Project Staff (all casual)

SLOCI Coordinator

Ruben Kara Manning (commenced 23 April)

SLOCI Coordinator

Misha Lee (commenced 23 April)

SLOCI Coordinator

Siyu Liu (from 23 April to 9 November)

SLOCI Coordinator

Ahsin Waris (from 23 April to 16 November)

SLOCI Course Ambassador ENGG1200

Jordan Beiraghi (commenced 8 October)

SLOCI Course Ambassador ENGG1200

Nathan Holyoak (commenced 8 October)

SLOCI Course Ambassador ENGG1200

Constance Keenan (commenced 8 October)

SLOCI Course Ambassador ENGG1200

Samuel Weir (commenced 8 October)

SLOCI Course Ambassador ENGG1211

Natalie Law (commenced 19 November)

SLOCI Course Ambassador ENGG1211

Vy Le (commenced 19 November)

SLOCI Course Ambassador ENGG1211

Krittika Mehta (commenced 19 November)

TeachingPlus@UQ Project Manager

Vilma Simbag

TeachingPlus@UQ Learning Designer

Ellen Dearden

tJM/Semant User Support &

Rhianna Pedwell (departed 29 June)

TeachingPlus@UQ Project Officer

VISITORS

Academic visitor, Associate Professor Huili Zhang, from Harbin University, departed on 19 September.

Contact Information

Contact Information

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Appendix – eLIPSE Tools

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Notes:

- eLIPSE has provided an avenue whereby local high-impact, proven tools conceived and developed by one staff member, and initially used as a stand-alone application run on a local desktop or server, can be modified and maintained to support academics across both faculties. A number of eLIPSE tools fall into this category.
- A number of tools that were originally developed for one school now have users across both faculties.
- Some projects have received funding support from multiple grants as they followed a trajectory of enhanced functionality and increasing usage.
- Where course enrolment figures are presented, they are for 2018.

A4D and A5D Learning Environment

Tool (Status)	Funding Source	Used by	Numbers
A4D Construction (Advanced EnginB) (completed – maintenance)	OLT Grant	Architecture (general)	
A4D Construction (Kingston) (under development)	Kingston University, UK	Architecture (general)	
A5D Learning Environment (completed – maintenance)	TEL Grant	Architecture (general)	

Type of tool: A searchable, web-based repository for a variety of digital resources (photographs, videos, virtual reality exercises, interviews and sound bites), facilitating their use across multiple courses and independent of individual Blackboard sites.

Pedagogic Value: Addresses problems associated with the provision of engaging and realistic learning experiences in architectural technology. Digital resources and integrated online learning activities support a consistent and sequential learning experience across nine core courses that comprise the Architectural Technology discipline stream.

Appendix – eLIPSE Tools

User Feedback: Positive experience of the AEB material has led to work with and interest from external universities (Kingston U, UK – under development, and UWA – in negotiation).

Adaptive Language Testing

Status	Funding Source	Used by	Numbers
Under development	TI Grant	ICTE, First Year Engineering	

Type of tool: A computer adaptive testing platform for discipline-specific, English language screening tests to identify linguistically at-risk students. Proprietary tools for identifying general academic English language abilities exist but are not tailored to discipline-specific requirements and are unsustainably priced for application across large cohorts such as First Year Engineering.

Pedagogic Value: Language barriers can prevent students from succeeding at UQ. Linguistically ‘at risk’ students require support from the commencement of their programs and this tool will facilitate tests to ensure that all students requiring assistance can receive support.

Balance of Nature – Deep Concepts

Status	Funding Source	Used by	Numbers
Under development	FoS T&L Grant	BIOL2010	BIOL2010 (185)

Type of tool: An on-line module for BIOL2010 (Ecology) to encourage students to confront their own understanding of a concept that is both household and scientific, through staged and reflective examinations of these perceptions and their perceptions of text book explanation and short excerpts from selected primary source documents, in preparation for tutorial discussion and presentations. The tool will be based on the MOOCchat platform and may use Semant for marking.

Pedagogic Value: Performance data, student feedback and teacher perceptions all show that students are having difficulty with the idea that text book knowledge can be challenged; that science advances through the dual processes of criticism and the offering of alternative concepts and ideas. Along with this, we need to develop student skills in finding primary literature, evaluating it, and deploying that knowledge.

Appendix – eLIPSE Tools

Casper

Status	Funding Source	Used by	Numbers
Completed – maintenance		ENGG1200	ENGG1100 (860), ENGG1200 (830)

Type of tool: An online Q&A tool to facilitate student-student and student-teacher interaction in large classes.

Pedagogic Value: Collaborative learning and student ownership of learning.

User Feedback:

“Casper’s value for staff lies in being able to capture what’s troubling students and see a progression in their learning, based on the questions they’re asking.” ENG1100 and ENGG1200 Project Leader.

ChemHub

Status	Funding Source	Used by	Numbers
ChemHub Completed – maintenance	FoS T&L Grant	Chemistry (general)	CHEM1100 (1,426), CHEM1090 (407), CHEM1200 (671), CHEM1221 (250), CHEM1222 (228). 2,275 students enrolled in at least one course using ChemHub.
BIOL3211 Under development	FoS T&L Grant	BIOL3211	BIOL3211 (31)

Type of tool: ChemHub provides a laboratory learning website as a foundation for multiple first year chemistry courses. It integrates common learning resources which were previously spread across multiple separate Blackboard sites. The previously completed tool will be adapted for use by BIOL3211.

Appendix – eLIPSE Tools

Pedagogic Value: An enhanced and value-added learning experience for students in large first year chemistry courses. Contributes to blended learning and ease of use of learning resources by students. Specifically designed for presentation of laboratory resources. Consistency in the delivery and platforms used for blended-learning tools in first year chemistry courses

ChemVis

Status	Funding Source	Used by	Numbers
Completed – maintenance	FoS T&L Grant	Chemistry (general)	CHEM1200 (55)

Type of tool: The molecular structure simulation is part of the University of Colorado PhET Interactive Simulations project which provides open-source interactive, research-based simulations to help students engage in science and mathematics through inquiry. eLIPSE component is an interactive simulation for the topic of acid/base equilibria to cover all of the concepts included in the first year chemistry curriculum.

Pedagogic Value: An enhanced and value-added learning experience for students in large first year chemistry courses. Offers additional learning resources for topics that appear to be most challenging (based on student feedback and exam performance), such as carbonyl chemistry and aqueous solutions equilibria.

Data Rich Scenarios

Status	Funding Source	Used by	Numbers
Under development	FoS T&L Grant	Mathematics/Veterinary Science	VETS1018 (126), VETS1030 (103), VETS3022, VETS4040 (108), VETS5016 (85), VETS5024 (105), VETS6001 (6001) STAT1201 (1,146), HRSS3101 (291), HRSS7101 (103), PHRM1020 (161)

Type of tool: An online system for presenting scenarios to students as a range of interactive stories. Each will have data sets that are unique to the student, so students are able to discuss processes without sharing answers.

Appendix – eLIPSE Tools

Pedagogic Value: Although principles of outbreak, public health and animal production investigations are taught across various courses within the Faculty of Science, they remain abstract to students. Scenarios and simulation-based teaching provide students with an enhanced learning experience of what they might face in the ‘real world’ and prepare them better for practical challenges, particularly when faced with quantitative aspects of an investigation. They provide an interactive and self-directed learning tool that complements lecture and textbook content in a blended environment.

GetSet

Status	Funding Source	Used by	Numbers
Completed – maintenance	OLT Grant, OLT Extension Grant, EAIT T&L Grant	First Year Engineering, First Year Science	ENGG1100 (860) MATH1051 (1,601)

Type of tool: An online pre-test for first year students that enables commencing students to self-test their readiness to study their chosen courses. GetSet measures a number of cognitive and non-cognitive factors shown to be significant predictors of academic success and provides individualised feedback to students

Pedagogic Value: Students receive an individual matrix report showing their knowledge mapped against the prerequisite knowledge for a number of courses. They also receive suggestions for learning resources and support sessions to help them get a good start.

User Feedback:

“So successful in EAIT that all BSc students now use GetSet.” Director, First Year Engineering.

Help!

Status	Funding Source	Used by	Numbers
Completed – maintenance	TEL Grant	BEL, EAIT, HABS, Science. Science use was to cease in 2019.	BEL 1 course, EAIT 4 courses, HABS 2 courses, Science 9 courses. 5,901 students enrolled in at least one course using Help!

Appendix – eLIPSE Tools

Type of tool: A scalable, systematic approach to course communication, embedded in Blackboard. Help! directs students to the appropriate resource or person to answer their queries. The system helps track and analyse students' requests for help and ensures efficient communication

Pedagogic Value: Improved student experience via a single self-help point. Reduction in 'spray' approach to seeking assistance saves valuable time for teams of staff teaching very large classes. Staff trace, log, and store responses to provide a quality assured system and to evaluate where improvements are necessary.

User Feedback:

"When running one of the Adobe Connect sessions for the external postgraduate students the course coordinator received, without any prompting, comments on Help! and the Learning Pathway. The students were thrilled with how wonderful they were. They also commented that it was the best postgrad site they had accessed." PUBH7620 Coordinator.

"Email traffic is now visible/traceable across teaching staff/ courses. This gives us an indication of problems encountered by students and how long it takes to resolve them. The tool is bridging communication gaps in a teaching environment where multiple staff members are responsible for dealing with student enquiries. A seamless experience in seeking assistance is provided for students."

Director, First year Engineering

theJourneyMaker

Status	Funding Source	Used by	Numbers
Completed – maintenance	TEL Grant	Chemical Engineering, ITEE, FoS	Bachelor of Environmental Management, Master of Data Science, PHIL1002, Bachelor of Engineering (Chemical), Bachelor of Equine Science. Bachelor of Veterinary Science curriculum mapping and Engineering Curriculum Review have flagged future use.

Appendix – eLIPSE Tools

Type of tool: Web-based, holistic curriculum design and visualisation tool to describe development of knowledge, skills, and personal attributes and facilitates advances visualisation. It includes a set of generic taxonomies covering discipline specific knowledge domains, assessment ontologies, situational complexity descriptors, and associated data structures. The tool can be used to demonstrate AQF conformance, compliance with professional accreditation requirements.

Pedagogic Value: Addresses program-level development and change, by providing design and visualisation tools to inform curricular choices to aid curriculum leaders, academics and educational developers in the enhancement of curriculum design and the student experience.

User Feedback:

"I think the process was useful because it is a pretty complicated degree and being able to see laid out...visually...it has been useful. Being able to see the linkages between the courses and when the different levels are taught. Also to map what information the students were actually getting from the ECP has been beneficial." Bachelor of Environmental Management review project leader.

"The process helped to bring about best practice in curriculum design...when we were doing the data collection and analysis...it challenged us...it allowed the course lecturers to think in terms of the alignment of learning objectives with the assessments and attainments, and with the broader competencies and program objectives." Master of Data Science program development leader.

"The JourneyMaker is useful because previously we had all these spreadsheets all over the place, trying to make sense of everything, trying to pull it together. Putting it into JourneyMaker with its front tabs and visualization tools...just made life easier..." Master of Data Science development program leader.

"We (at SAFS) have been viewing tJM as purely a tool for individual analysis and we may have missed the potential power of tJM for supporting and guiding collaborative work on program design, development, review - and breaking down any silo mentality that might prevail." Bachelor of Equine Science development project leader.

Note: It is possible that tJM could yet be rolled up into a UQ end-to-end curriculum project that is likely to arise from the current Program Architecture Project.

Appendix – eLIPSE Tools

Lab in the Clouds

Status	Funding Source	Used by	Numbers
Under development	EAIT T&L Grant	Mechanical & Mining Engineering	MECH4480 (70)

Type of tool: Cloud-based, distributed-computing infrastructure for delivery of computing intensive courses remotely, especially to large classes, addressing the challenges of courses that require bespoke computing environments or software, availability of hardware resources (limitations caused by the size of computing laboratories), incompatibility between software packages and incompatibility with students' own devices.

Pedagogic Value: Delivers advantages for students in increased flexibility in mode of study, using own devices while off-campus, more authentic assessments, better diagnostics and improved digital literacy. As staff have remote access to the virtual machines, they can provide targeted feedback/advice to students working on their problems remotely.

LabPass

Status	Funding Source	Used by	Numbers
Under development (preparation for TI Grant project)	EAIT T&L Grant	Civil Engineering	CIVL2131 (206)

Type of tool: A virtual learning environment that anonymises/synthesises prior laboratory data and enables pre-laboratory exercises to be (semi-) automatically assessed. The pre-laboratory assessment serves as a gatekeeper to the physical laboratory so that a) only students who show mastery of the concept advance, and b) new valuable information about learning gaps can be identified.

Pedagogic Value: Enables teaching practice to be adjusted to a modern virtual learning environment which offers interactive learning resources. In particular, for the delivery of (large) classes with laboratory/practical sessions and the process of assessment and identifying learning gaps is critical to learning. Addresses several innovative teaching targets, in particular it is well aligned with the goal of investigation of innovative e-assessment and feedback practices, especially for large classes. It also facilitates an increase in the

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flexibility of modes of teaching and provides insights into learner activities and stimulate development of learning analytic tools that support research on student learning and retention.

Learning Pathway

Status	Funding Source	Used by	Numbers
Completed – maintenance	UQ T&L Strategic Grant, EAIT T&L Grant, TEL Grant	26 unique org units, 134 academics in 2018	226 LP instances for 190 different courses, 67 courses in EAIT and 81 courses in Science. 18,411 students enrolled in at least one course using the LP. 9 LP instances are extra-curricular courses, e.g. the Leadership in Science Program, ITaLI Graduate Teaching Associates Program.

Type of tool: A navigational interface in Blackboard course sites that provides students with a clear visual roadmap through their course to help them stay on track. Different versions of a Learning Pathway can be set up for the one course, allowing coordinators to cater specifically for the needs of internal, flexible, external, web-based or intensive delivery and differences for different locations (e.g. St Lucia and Gatton). The roadmap can be structured on a week-by-week basis or centred on project topics.

Pedagogic Value: Facilitates the move from instructor-centred approaches to learner-centred approaches. Expectations are conveyed and resources provided in an organised, easy-to-use manner. For students, it is an effective, easily accessible and visual means of navigation within the ill-structured authentic learning environments that are afforded by the flipped classroom pedagogical model. It is particularly useful for students in large first year courses and for courses which rely heavily on online engagement and presents a professional interface with Blackboard.

User Feedback:

“Since Semester 2, 2014, I have used Learning Pathway in the courses I coordinated. I have found Learning Pathway very useful in helping to pace my students in courses where there is a large amount of content to learn. The week-by-week schedule with links to the

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relevant Blackboard resources make it very easy for my students to know what they need to learn from week to week. This helps them to manage the content in small chunks. Students often report in the SECaTs that they appreciate the structured approach to learning. The new assessment timeline feature...is a very welcome addition. Students can see at a glance when various assessment tasks are due.” Level 1 MATH coordinator.

“I found this a fabulous tool for supporting student access to the course materials - but most especially as an organisation tool giving them structure and as a means of being prepared. The approach also helped me be clear on what I needed to provide for students in the setting up of the new subject and what I was expecting of them each week. Students’ feedback throughout the semester was that they really appreciated and liked the Learning Pathway, it especially suited students who did not make all lectures. Specific student feedback from SECaT, 'The Learning Pathways section on blackboard was really clear and helped!’ ” – Architecture academic.

“Everything is so well-structured, especially the new learning pathways folder. It makes navigating around the course page much easier!” MATH1051 student.

“Students liked the learning pathway setting and suggested that all courses should have the same setting.” ENGG1100 student focus group report.

Learning Resources Repository

Status	Funding Source	Used by	Numbers
Under development	FoS T&L Grant	Multiple purposes FoS	

Type of tool: A repository to store faculty-created learning resources which enables resource searching and sharing and reduces the duplication of resources sitting in Blackboard, Kaltura and other locations.

Pedagogic Value: Enabling courses to share resources that are relevant or can complement the learning materials will improve and support the student experience by giving the students access to materials and/or modules that will complement traditional face-to-face teaching and provide flexible access to learning resources.

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MOOCchat

Status	Funding Source	Used by	Numbers
Under further development	EAIT T&L Grant, TI Grant	ENGG1200, CHEM1100, MECH3200	CHEM1100 (132 voluntary), ENGG1200 (830)

Type of tool: A tool that facilitates online peer learning around challenging problems or concepts. The versatile marking interface will enable provision of feedback. Additional flexibility will be built in through widening the range of question types and embedding multimodal resources e.g. stimulus videos.

Pedagogic Value: Small group student discourse supports the development of higher level thinking and communication skills such as reasoning, explanation, co-construction of evidence-based arguments and reflection. It is often difficult to engage students effectively in large classes and even more challenging in blended environments. Current evidence indicates that students who participate effectively in peer discourse achieved measurable short and long-term learning gains.

Partnership with the UQ Critical Thinking Project is being explored for the 2019-2020 stage of development.

User Feedback:

“My thinking has changed to encompass further reasoning and chemistry logic behind the formation of the crystals, other than simply the reason for the presence of crystals.” CHEM1100 student

“The discussion allowed for me to understand how a high concentration of ions in solution can create these crystalline structures. The different structures due to subatomic charges was explained to me and helped me understand the phenomenon” CHEM1100 student.

“The best aspects of this course was having the MOOCchat sessions. They not only provided an opportunity for students to collaborate, but taught us how to manipulate our own intellectual debates with others who have a different depth of understanding and opinion.”
ENGG1200 tutor

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My Courses

Status	Funding Source	Used by	Numbers
Under development	EAIT T&L Grant	multiple EAIT courses	

Type of tool: Online access to functionality for course coordinators enabling one-click download of SI-net class lists, ability to request email notification upon changes in course enrolment (students enrolling or dropping the course), ability to register messages to be emailed to students when they enrol in (or drop from) a course, a web-based mail merge tool, to provide a simple interface to allow personalised messages to students enrolled in a course, links to other school/faculty/UQ web resources for the course.

Pedagogic Value: Contributes to an integrated learning environment. Course coordinators can more easily manage changes around student enrolment (e.g., if teams are used in a course) and more easily manage personalisation of messages to students in the course, improving the student experience.

User Feedback:

“Peter gave me access to the email notification system this year for ENGG1100, ENGG1200, and ENGG1600. It has saved me, my project leaders, and tutors hours, and many student teams significant anxiety, as I am able to inform them all immediately of a student withdrawing. I’m also able to follow up quickly with the withdrawing student if necessary. It is a fabulous tool and I am looking forward to using the rest of the suite, especially the one-click links.” Director, First Year Engineering.

MyPyTutor

Status	Funding Source	Used by	Numbers
Completed – maintenance	EAIT T&L Grant, FoS T&L Grant	CSSE1001, SCIE1000, MECH2700.	CSSE1001 (1,176), SCIE1000 (1,338), MECH2700 (180).

Type of tool: A coding task tool which supports students' development of key programming concepts in Python. This redesign has made it web-based and facilitated collection of learning analytics. It has the potential to be adapted for non-coding disciplines in the future.

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Pedagogic Value: Supports automated feedback to students and marking of small exercises, which makes it feasible to provide students with a large set of exercises. Provides much better support for students learning programming concepts than can be provided by tutors in a tutorial environment.

User Feedback:

“The students who are new to programming have found the extra support very helpful.” MECH2700 Coordinator

Note: Current discussions that would lead to Python becoming the programming language for all Engineering would mean use of MyPyTutor, and support requirements, would increase significantly.

eLIPSE Platypus

Status	Funding Source	Used by	Numbers
Completed – maintenance		ENGG1100, ENGG1200	ENGG1100 (860), ENGG1200 (830).

Type of tool: A web application that manages assessments from beginning to end. Platypus handles the release of assignments, presentation and submission of solutions and marking with feedback from peers and tutors.

Pedagogic Value: Students learn how to reflect on their own learning through a peer feedback process.

Note: Platypus was adapted to provide the peer assessment component of Semant.

Semant/Platypus

Status	Funding Source	Used by	Numbers
Under further development	TEL Grant, TI Grant, FoS T&L Grant x 2	BEL, EAIT, HABS, HASS, Science	BEL 6 courses, EAIT 1 course, HABS 4 courses, HASS 3 courses, Science 11 courses 4,063 students enrolled in at least one course using Semant

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Type of tool: Semant facilitates swift marking of Blackboard quizzes, performs semantic analysis on short answer questions to rapidly identify concepts students commonly struggle with, and facilitates higher-level feedback to students. Selected de-identified student responses can be used in class to focus discussion around common misconceptions and provide feedback to students. Following the third stage of development, Platypus has been adapted and integrated to allow students to participate in peer marking of quiz answers. These tools are particularly useful for large classes, where it is impractical for teaching staff to provide detailed feedback to all students.

Pedagogic Value: Implements a pedagogy that encourages students to prepare for active learning in class, and that enhances their engagement with learning. For teachers, Semant provides simple and efficient marking of written short-answer questions. For students, Platypus enables students to provide peer feedback to others on the quality of their answers, and to develop their critical thinking skills.

User Feedback:

"It is good because you have to read it before hand to actually understand what is going on in class, if you haven't read it then you are wasting your time." PHYS1001 student

"I have had such a massive positive response to just doing the odd response via email... that helps as well, it lets the students know you are there and listening." Course Coordinator - course not identified

"It's very hard to engage with all students prior to the lecture and this is a way to get that done in a not unreasonable amount of time...and students can see you doing it and that is the key if they see you taking it seriously." Course Coordinator - course not identified

"Semant is an extremely useful tool for flipped classrooms. By giving students written questions to answer as part of their preparation for class, it helps them take the preparation more seriously. However, the workload involved in marking these questions in e.g. Blackboard is prohibitive. Semant allows pre-lecture questions to be processed by teaching staff extremely rapidly, and get a sense of what the students struggled with before class. The next generation of Semant allows students to see the responses of others, and asks them to evaluate them. It helps them develop critical thinking and judgement - and see how the rest of the cohort is doing in an anonymous fashion. It is a fantastic tool to help you get the most out of classroom time." PHYS1002 Coordinator

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SmartAss

Status	Funding Source	Used by	Numbers
Completed – maintenance	OLT Grant, TEL Grant	Mathematics (general)	

Type of tool: An open-access online question and worked solution generator that 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. Its uniqueness lies in the accompanying fully-worked solutions. One click gives students a detailed step-by-step solution, along with written comments to guide them in their learning.

Pedagogic Value: Promotes pro-active engagement with online learning and provides innovative assessment and personalised feedback, especially for large classes. Teaching staff can see exactly which areas students are working on, and how proficient they are, thereby allowing staff to tailor their courses appropriately.

User Feedback:

“SmartAss (free!) is such a great resource and far better than any commercial package I have seen. The subtleties of the questions not only allow lecturers to understand what students’ conceptual knowledge is but the students themselves can see how their knowledge improves. Since using SmartAss for the last four years, there has been a huge improvement in students’ mathematical understanding at our university.” Mathematics academic, Auckland University of Technology.

eLIPSE Student Dashboard

Status	Funding Source	Used by	Numbers
Completed – maintenance	TEL Grant	ENGG1100, ENGG1200	ENGG1100 (860), ENGG1200 (830)

Type of tool: A series of graphical data points are presented to students so that they can visualise their own learning and track progress. Marks from Blackboard are graphically presented to students to benchmark their success compared to their colleagues.

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Pedagogic Value: Supporting and enhancing student engagement in a highly personalised manner. Peer benchmarks related to engagement and learning outcomes provide additional motivation to students to take ownership of and adjust learning behaviours. The dashboard provides the granularity necessary to account for student performance in blended learning environments.

User Feedback:

“Great tool, everyone should have access to this.” “Clear and user-friendly interface. Average and Personal Mark clearly indicated and comparable.” “I liked every single thing about this tool. It shows everything I am interested in very clearly.” “Visuals are good including average as well as individual score allows good visualisation.” ENGG1200 students.

TeamAnneal

Status	Funding Source	Used by	Numbers
Completed – maintenance	TI Grant	multiple EAIT courses, potential for Science	

Type of tool: Team formation software tool that allows teams/groups to be formed based on specified constraints e.g. characteristics of the students (such as demographic information, academic performance, class sign-on information etc.), constraints specified by the academic, and a group numbering scheme or a set of team names specified by the academic.

Pedagogic Value: Student team work is increasingly important in many UQ courses. Purposeful creation of student teams ensures groups have the desired characteristics for particular learning activities, be they teams for a whole-semester project or groups for just a single active learning class in a collaborative learning space. Better results often ensue when students are placed into groups with particular characteristics rather than being placed randomly or being self-assigned. The tool can revolutionise team formation for large classes; what used to take two tutors two days can be done instantaneously.

User Feedback:

“It used to take my tutors at least a day to put together the teams for a cohort of 1,000+ - now it’s done in a matter of minutes, and the tool ensures complex criteria for team formation are followed.” Director, First Year Engineering.

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Urban Water Engineering

Status	Funding Source	Used by	Numbers
Under development	EAIT T&L Grant	AWMC	

Type of tool: A tool based on a virtual framework covering core engineering aspects of the urban water cycle. Using South East Queensland as a case study, the tool will present a clickable map with an overview of key elements in urban water systems, from water storage dams through drinking water treatment plants, water distribution networks, sewer collection and pumping stations, wastewater treatment plants and reuse/discharge processes.

Pedagogic Value: Improves the practical training of both students and early career engineering professionals with resources that bring theoretical concepts closer to real world applications and problems. Addresses, through visualisation, the difficulty that students may experience in understanding complex and abstract concepts.

List of Acronyms and Initialisms

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AWMC	Advanced Water Management Centre
EAIT	Faculty of Engineering, Architecture and Information Technology
ECP	Electronic Course Profile
eLIPSE	(Centre for) eLearning Innovations and Partnerships in Science and Engineering
FoS	Faculty of Science
HABS	Faculty of Health and Behavioural Sciences
HASS	Faculty of Humanities and Social Sciences
ICTE	Institute of Continuing and TESOL Education
ITEE	School of Information Technology and Electrical Engineering
ITS	Division of Information Technology Services
ITaLI	Institute for Teaching and Learning Innovation
LP	Learning Pathway, eLIPSE tool
OLT	(Commonwealth Government) Office of Learning and Teaching
SAFS	School of Agriculture and Food Sciences
SECaT	Student Evaluation of Course and Teacher
SI-net	Student Information system
T&L	Teaching and Learning
TEL Grant	Technology-Enhanced Learning Grant
TI Grant	Teaching Innovation Grant
tJM	theJourneyMaker, eLIPSE tool
UQ	The University of Queensland