HARNESSING FEEDBACK ANALYTICS TO IMPROVE FEEDBACK PROVISION, STUDENT ENGAGEMENT WITH FEEDBACK AND ACADEMIC PERFORMANCE

PROJECT OUTCOMES

This project will provide novel insights into how students use the digital feedback provided on their assessment submissions. This evidence will be used to initiate an international transformation in the feedback practices of academics, markers and students, which promotes 'assessment for learning' in higher education, through the following deliverables and outcomes:

Deliverable 1: Adapt Feedback Analytics Capture System (FACS), a tool that captures and visualises data on feedback provision, feedback use by students and student academic performance, to be capable of wide-spread, scalable adoption and is

- open source
- platform and device independent
- compatible with commonly used learning management systems
- secure whilst enabling sharing of de-identified data between institutions.

Outcome 1: Develop evidence-based models of feedback practices based on a detailed understanding of the relationships between

- feedback provision (e.g. audio, typed, quantity, content, complexity etc.)
- how students access and use feedback
- student academic performance
- contextual factors (e.g. student background, discipline, type of assessment).

Outcome 2: Determine the impact of feedback interventions based on FACS data on feedback practices and academic performance

Deliverable 2: Guidelines for academics, markers and students to promote effective feedback practices that engage students in the effective use of feedback

Outcome 3: Wide-spread, sustainable adoption of FACS and Guidelines

VALUE AND NEED FOR PROJECT

Feedback is a potent facilitator of student learning (Hattie 2009). Despite this, the provision of feedback has been identified by students as one of the weakest elements of university teaching (Graduate Careers Australia 2012; Surridge 2009). The emergence of online feedback tools enables the delivery of timely, expressive feedback to large cohorts of students, however, the question of what students do with this feedback remains. To address this gap, we have recently developed an online system that collects detailed information on digital feedback provision, how students access this feedback, and changes in performance. Our previous OLT projects have also provided the foundations to addressing challenges associated with interpreting these data readily and accurately, and translating the findings into improved teaching practice and student outcomes (Dawson & McWilliam 2008; Dawson et al. 2011). During this project, we will build on recent advances to harness feedback analytics to provide academics, markers and students with guidelines, and the personalised evidence, necessary to optimise feedback practices and improve students' academic performance.

PROJECT RATIONALE

There are many well-evidenced and theoretically sound guides on how to improve feedback provision in academic settings (e.g. Nicol & Macfarlane Dick 2006; Hattie & Timperley 2007). However, Kluger and DeNisi (1996) found that over 38% of the effects of feedback reported in the last 100 years actually *reduced* performance compared with no-feedback controls. Following his OLT Senior Fellowship, Boud argued that academics need to shift their focus away

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from how feedback is provided, and instead focus on understanding how students use feedback to improve performance in related assessment tasks, and then use this evidence to drive changes in feedback provision (Boud & Molloy 2013). At present, there is very little direct, empirical evidence on how students use feedback (Jonsson 2013).

In the context of multi-modal feedback on electronic assessment items, students report that the provision of audio feedback increases their engagement with, and usefulness of, feedback (Rhind et al. 2013; Ice et al. 2007). Students also report that a combination of typed and audio feedback is more useful than providing either typed or audio feedback alone (Still 2006). However, academics commonly assert that students do not collect or read written formative feedback (Sinclair & Cleland 2007; MacDonald 1991). It has also been reported that when students do attempt to use feedback, they lack the necessary strategies to do so effectively (Furnborough & Truman 2009). While the widespread adoption of online marking and feedback tools has made it easier for students to collect feedback, there is currently no systematic way to investigate student interactions with this feedback, or how these interactions impact subsequent performance (Ellis 2013; personal communications with Prof Colbran (ReMarksPDF creator, Carrick and ALTC Priority projects 2007, 2009, 2010) and TurnItIn representatives). This project will engage academics, markers and students in the development and use of a web-based tool that collects data on feedback provision, use and impact. This evidence will be used to develop a rich understanding of the key factors that impact on student engagement with, and effective use of feedback on electronic assessment items. These findings will be used to develop guidelines and personalised visualisations of feedback analytics data that improve the feedback practices of academics, markers and students, across the higher education sector.

APPROACH AND DISSEMINATION

Theoretical Framework

While there are many theoretical frameworks aimed at improving feedback provision (Sadler 2010; Nicol & Macfarlane Dick 2006; Hattie & Timperley 2007), to date, there are no well-established theoretical frameworks, and very little direct evidence, on how students use feedback. A recent extensive review of 109 empirical studies reporting findings about how students use feedback (Jonsson 2013), found only two studies that employed methods that observe students actually using feedback (Dessner 1991; Dohrer 1991). The remaining studies relied on surveys or interviews of students self-reporting how they used feedback. This review revealed important discrepancies between the feedback attributes students say they value, and feedback attributes that actually support student learning. Specifically, students typically request large amounts of specific, detailed and individualised feedback, but large amounts of highly directive, task specific feedback is detrimental to independent student learning (Jonsson 2013). Therefore, evidence of student use of feedback is needed to guide the development of theoretical frameworks that support students, markers and academics in improving students' effective use of feedback to promote independent, long term learning processes.

This project draws on the new field of learning analytics research, which has arisen from recent explosions in activity in the established fields of educational technology and educational data mining (Haythornthwaite et al. 2013). Rapid progression of learning analytics is being fuelled by the increasing availability of diverse online educational resources and assessment tools, increased use of blended and online education, and advances in the technological capacity to store and analyse detailed logs of users' interactions with these educational elements (Long & Siemens 2011). The overarching framework for this field outlines a series of pre-processing, exploratory data-mining and post-processing stages, used to inductively derive informative patterns from large educational data sets, which can be used to assist students, academics,

educational designers, IT services and policy makers to make decisions that enhance student learning (Peña-Ayala 2013). Early studies in this field have explored how students use online quiz systems which provide computer generated feedback (Warnakulasooriya et al. 2007) and the impact of providing students with visualisations of analytics from their interactions with learning management systems (Arnold & Pistilli 2012). This project will build on this work by investigating both how students interact with the feedback on their assessment submissions provided by academics and markers, and how visualisations of these interactions with feedback impact on the feedback practices students, markers and academics. In this way, this project will provide the foundation for broader learning analytics research on providing students with information about their interactions with a range of online assessment tools and resources in ways that promote effective learning. Ultimately, the methodologies developed during this project will advance the field of learning analytics, while the findings from this project will provide new insights to guide research and practice in feedback and assessment for learning.

Progress to date

Deliverable 1: Feedback Analytics Capture System (FACS)

We have developed, implemented and evaluated FACS (an open-source, online feedback and marking tool previously known as "UQMarkUp") which collects and visually represents data on when and how long students access individual feedback annotations, the amounts and content of feedback provided in typed and audio modalities, and how students perform longitudinally across assessment items (Zimbardi et al. 2013). Using FACS at the University of Queensland (UQ), we successfully completed proof of concept studies in 2012-2014 across 10 large undergraduate courses at first, second and third year levels in biomedical science involving 85 markers, marking over 8,000 written assignments (literature reviews, research proposals and laboratory reports) for 3,000 students, and 45 oral presentations for 186 students. These trials provide a solid foundation for successful expansion into the proposed multi-institution project.

Outcome 1: Evidence-based models of feedback practices

FACS collects feedback provision data that is both quantitative and can be qualitatively analysed to determine how markers phrase these comments, and what markers are commenting on (e.g., content, cohesiveness of argument, grammar etc.). Preliminary analysis has shown that in the context of biomedical science reports and essays, markers provide 7 ± 1 (mean±SEM) audio comments of 30 ± 2 seconds, and six typed annotations of 9 ± 1 words, in each 1000-1500 word assignment).

FACS also provides data on how students access their feedback via the online interface, with preliminary analysis revealing that, on average, students access their online feedback for ~3hr and play the majority of the *in situ* audio annotations completely, often multiple times (Zimbardi et al. n.d.). Against this backdrop, students who made large improvements in assessment performance between successive assessment tasks (>10% mark improvement), access their marked assignments for significantly ($p<0.05$) longer (4.5 ± 0.5 hours), and played more audio comments (100%, some audio several times) than students who either made small gains or performed more poorly (2.5 ± 0.5 hours, playing half to two thirds of the audio comments). This data has allowed us to begin to develop models of the amount and types of feedback being provided, how students are interacting with this feedback, and how this relates to changes in academic performance. This project will build on this work to identify generalisable relationships, and which factors are most impacted by a range of context factors.

Outcome 2: Understand the impact of FACS-based interventions on feedback practices

In a recent workshop, we provided 15 experienced and novice markers with confidential, individualised reports on the digital feedback they provided, and the extent to which students accessed the feedback. Markers were also provided with the cohort averages for the same variables. This prompted measurable changes in feedback provision behaviour of a subset of markers who had been providing less audio feedback than the cohort average. This change in feedback provision was associated with a significant improvement in the academic performance of their students on the subsequent related electronic assessment task ($p<0.05$). While the reproducibility of these early findings needs to be tested, this demonstrates the feasibility of using FACS data to direct, underpin, and evaluate feedback-related interventions.

Outcome 3: Wide-spread adoption of FACS and Guidelines

Presentations illustrating the capabilities and simplicity of FACS in the above proof of concept trials (e.g. Zimbardi et al. 2013; Colthorpe et al. 2013; Bugarcic 2013; Dekker et al. 2012) have engaged adopters and change agents at University of Sydney (USyd), Curtin University (Curtin), University of South Australia (UniSA), University of Auckland (UAuckland) and University of Edinburgh (UEdinburgh). These collaborators have joined the 'Harnessing Feedback' Project Team, committing to the adaptation and adoption of FACS at their institutions. These collaborations provide important links to international and national networks of universities, including four Australian states, and the Go8 and ATN sectors. In addition, Associate Professor Liz Johnson (La Trobe University) and Dr James Crane (Charles Sturt University) have joined the Harnessing Feedback network as "non-participating members" (Office for Learning and Teaching 2014, p.21) and will contribute to shaping project outcomes and deliverables throughout the project, to ensure the project outcomes and deliverables can be cascaded to their institutions. This broad foundation of collaborations provides networks to draw in an extensive and diverse set of potential adopters during the project, and achieve the wide-spread uptake necessary to impact feedback practices across the Australian higher education sector.

Project Outline

Deliverable 1: Feedback Analytics Capture System (FACS)

Timeline: FACS adaptations February 2015 – May 2015 (Phase 1)

Detailed discussions with IT innovators at each of the partner institutions have established the four key changes that will enable sustainable, scalable uptake of FACS at all of the partner institutions, and more broadly:

1. Integrate FACS with institutional learning management systems (LMSs)
2. Expand the current tablet-based marking app to a web-based marking tool
3. Establish servers for local hosting of FACS and associated data
4. Develop Application Programming Interfaces (APIs) for ethical sharing of FACS data

The technical specifications for these adaptations are detailed in the Design Specifications. Briefly, integration with institutional LMSs ensures FACS is compatible with universities using a mainstream LMS (e.g. Blackboard, Moodle), and will be straight forward for IT service staff and academics to activate and use **(facilitates Outcome 3)**. The expansion to a web-based marking tool will allow markers to use any device (e.g. desktop computer, tablet) to embed feedback annotations *in situ* and mark using a range of options including criteria-standards rubrics **(facilitates Outcome 3)**. The use of local resources for hosting FACS ensures each institution develops the expertise and allocates the necessary resources to sustain the system after the project completion **(Outcome 3)**. Finally, developing a deep understanding of the relationships

between feedback provision, use, academic performance and context **(Outcome 1)**, and the impacts of feedback interventions on these relationships **(Outcome 2)**, requires sharing of FACS data amongst the project team. Consultation with ethics review boards at each institution has established that local hosting of the data, and use of APIs that authenticate specific project team members against pre-determined levels of authorisation to extract specific variables from FACS data, from consenting students, markers and academics in a de-identified form that does not allow participant identity to be ascertained, will satisfy requirements for the confidential sharing of FACS data.

The Developer will execute these adaptations of FACS in close consultation with IT Innovators, and IT services at each institution in February – April 2015. In May 2015, the revised FACS will be trialled and refined on test instances of institutional LMSs. The Developer will also update the **documentation** required for IT services staff to **implement FACS autonomously**.

Outcome 3: Wide-spread adoption of FACS and Guidelines

Timeline: FACS refinements during trial implementations June 2015 – December 2016 (Phase 2)

The **first implementations** at the participating universities will be staggered to allow the developer to troubleshoot issues in smaller trials, and refine FACS as more universities begin to implement. The first round of implementations will begin at UQ and UAuckland at the beginning of Semester 2, in July 2015, followed by the UEdinburgh at the beginning of the Fall Semester in September 2015. The delayed semester start at UE will allow the developer to complete the first round refinements. These universities have been chosen for the first trials based on their extensive experience with FACS (UQ), implementing innovative learning technologies and evaluating the pedagogical intentions and impacts (UAuckland), use of multimodal digital feedback (UEdinburgh), accessibility of IT service teams to the Project Team IT Innovators (UQ, UAuckland, UEdinburgh) and different LMS platforms (Blackboard: UQ; Moodle: UAuckland, UEdinburgh). The **second round of implementations** will incorporate progressive revisions, and will include all of the participating universities, beginning in January 2016 with the Spring Semester at UEdinburgh, followed in February 2016 with Semester 1 at UQ, UAuckland, USydney, UniSA, and Curtin. This order also allows USydney and UniSA to select sequences of implementations that compliment contexts characterised in the earlier trials.

Given the extensive expertise of the UQ Project Team in the design, implementation and evaluation of FACS, each of the six Academic Implementers on the UQ Project Team will be partnered up with an Implementation Team at a partner institution to provide **regular support and mentoring**. Each implementation will be preceded by a **training phase** for all staff involved in using FACS, including administrative staff, academic implementers and markers as needed. The experience of UQ, UAuckland and UEdinburgh detailed above will ensure minimal training will be required, which can be conducted locally or via Skype for UAuckland and UEdinburgh. For USydney, UniSA and Curtin, on-site training will be conducted by members of the UQ Project Team (e.g., Zimbardi, Kibedi, Bugarcic) who have experience in teaching colleagues and large teams of markers to use FACS and multi-modal feedback. These **workshops** will include discussions of principles of **good feedback practices** (Sadler 2010; Nicol & Macfarlane Dick 2006; Hattie & Timperley 2007).

Outcome 1: Evidence-based models of feedback practices

Timeline: Data collection and analysis from implementations August 2015 – June 2016

Several cycles of re-iterative data collection and analysis will be required to reach the outcome of trustworthy (internally and externally validated) models of the relationships between feedback provision, feedback use, academic performance and context **(Outcome 1)**. This re-iterative analysis will also be used to ensure these models are developed into personalised,

interactive visualisations of feedback analytics data that have positive impacts on the feedback practices of academics, markers and students **(Outcome 2)**, and into guidelines that effectively shape the feedback practices of staff and students more broadly **(Deliverable 2)**. In addition to the FACS data described in the Progress to Date section, we will use surveys, interviews and feedback use studies as described below, with stratified sampling of participants or responses, to develop a detailed understanding of successful and less successful feedback practices.

FACS currently has the capacity to embed **surveys** directly in the annotated assessment items students receive. This provides an effective way to collect informed consent, evaluations of the quality of feedback provided and student perceptions of how they use feedback. These surveys will also be used to collect context variables found to be important in the use of feedback and student approaches to learning in previous ALTC/OLT projects (e.g. Meyer et al. 2008; Dawson et al. 2011) such as engagement (using selected NSSE/AUSSE items), and permission to extract demographic and academic performance data from university records.

Individual and focus group **interviews** will be used to engage academics, markers and students in critical analyses of the models as they are developed from data collected each semester. Participants will also be presented with visualisations of FACS variables found to be associated with improved academic performance, and asked to describe how having access to these visualisations is likely to impact on their feedback practices.

Feedback use studies will employ think-aloud protocols coupled with screen capture to provide in-depth information on how students use feedback, and determine how feedback use relates to FACS data on feedback access. Prof Merrilyn Goos has generously invited our team to use the new Science of Learning Research Centre educational laboratory at UQ. This allows the inclusion of eye tracking and autonomic nervous system measures, which will reveal how students view typed feedback annotations in relation to their submitted assessment, and students' emotional responses (e.g., confusion, anger) during their review and use of feedback.

Outcome 2: Understand the impact of FACS-based interventions on feedback practices

Timeline: Investigation of feedback interventions July 2016 – June 2017 (Phase 3)

FACS data, surveys and interviews will be used to evaluate the impacts of all feedback interventions. Based on our previous work, two feedback interventions are planned:

Questionnaires will be embedded in the annotated and marked assessment items students receive to prompt them to reflect on, articulate, evaluate and strategise the ways in which they use feedback. Students' self-regulation strategies for using feedback will be analysed and developed based on methods used in our previous work (e.g. Ogiji et al. 2013).

Visualisations of key variables identified as promoting positive changes in feedback practices may be investigated for development into **dashboards** within FACS for academics, markers and/or students. Alternatively, such visualisations may be used in workshops for academics, markers and/or students to raise awareness of the current feedback practices, and generate engaged discussion about how these practices might be improved.

Deliverable 2: Guidelines for effective feedback practices

Timeline: Synthesis of Outcomes 1 and 2 July 2016 – Jan 2018 (Phases 2-3)

Findings from Outcomes 1 and 2 will be integrated into a set of guidelines for academics, markers and students, highlighting the feedback practices of each group that have been found to promote students' effective use of feedback and improvements in academic performance. Draft guidelines will be evaluated by participants in interviews, Reference Group and non-participating members. The final guidelines will be developed into a set of **three short guides** (one each for academics, markers and students) and made available on the OLT website.

Outcome 3: Wide-spread, sustainable adoption of FACS and Guidelines

Timeline: Conferences, symposia and workshops throughout project, increasing in July 2016 – December 2017 (Phase 4)

Adaptation of FACS and wide-spread adoption of the project outcomes and deliverables across a broad range of assessment contexts, disciplines and institutions, nationally and internationally, is a key focus of this project. The project detailed here is fundamentally concerned with disseminating a tool for capturing evidence of feedback practices and academic performance, developed and trialled at UQ, to five other institutions and improve feedback practices more broadly. In addition, two institutions are already committed to being non-participating members throughout the project. We will grow this group of non-participating members, and a broader 'Harnessing Feedback network' as follows:

1. We will **invite** interested academics to **join the Harnessing Feedback network** when we provide **updates (emails, flyers and presentations)** on project milestones that generate important outcomes and useful deliverables to our extensive international networks. Specifically, Project Team and Reference Group members will facilitate communication with the Transforming Assessment network (Geoff Crisp and Mathew Hillier), UK Transforming Assessment (Anne-Marie Scott), Ascilite (President: Cathy Gunn), SoLAR (Executive Committee: Phil Long, Shane Dawson, Dragan Gasevic), Australian Council of Deans of Science (John Rice, Liz Johnson), and several disciplinary networks including CUBEnet (Phil Poronnik, Kirsten Zimbardi), VIBEnet (Charlotte Taylor) and CHEMnet (Gwen Lawrie). In addition, the Project Team members will present at national and international conferences throughout the duration of the project.

2. We will also actively recruit future implementers through **two symposia** (in March-April 2016 and 2017), and **several worksho**ps conducted intensively throughout the final 18 months of the project. We will utilise the diverse geographical distribution of the current Project Team and non-participating members to host these engagement activities. This approach will be used to foster and substantiate the distribution of ownership of the project outcomes and deliverables throughout the team, increasing both engagement and reach; an approach which has already led to successfully engaging the five partner institutions included in this project proposal (e.g. Zimbardi et al. 2013; Colthorpe et al. 2013; Bugarcic 2013; Dekker et al. 2012). This approach also reduces the time limitations and costs associated with extensive travel of the Project Leader. Instead, it allows the project to support local hosts in holding the events as catered workshops at venues outside their universities under the banner of the Harnessing Feedback network, to foster cross-institutional engagement and dissemination.

During the cascade of additional implementations toward, and beyond, the end of this project, Project Team members will be partnered with new implementers at nearby institutions to engage in regular updates on progress and provide **in-time mentoring and support**. Again, this approach will facilitate the distribution of expertise and ownership throughout the growing network. Where appropriate, the current Project Team will support new implementers in leading OLT Extension grants to rigorously evaluate the impacts of FACS implementation.

PROJECT MANAGEMENT

The **Project Leader**, Zimbardi, will be responsible for central coordination of the project activities and ensuring timely progress in achieving the outcomes and deliverables, assisted by the **Project Manager** and **External Evaluator**. Zimbardi and Dekker (original FACS developer) will supervise the **Project Developer**, and **Quantitative** and **Qualitative Analysts**, employed at UQ. **Each institution** has committed to **$10,000 cash contribution**, which will be held locally to support engaged dissemination of project deliverables and outcomes, and raise the profile of Project Team members in teaching and learning innovation and excellence. Each institution has

also committed Project Team members and IT resources and support staff necessary to implement and embed FACS in ongoing practice, an essential commitment to ensure sustainability after project completion. Specifically, each partner institution has committed to contributing Project Team members from four key areas: 1) IT Innovation, 2) Academic Leadership 3) Academic Implementation teams and 4) Learning Analytics Researchers.

The **IT Innovator** will direct FACS adaptation, implementation and refinement to ensure compatibility with their local IT systems, adherence to data security requirements, and that appropriate resources are made available to enable scalability and sustainability of FACS. The **Academic Implementers** named in the project team will pioneer the use of FACS in 1-2 of their courses in the initial trials of the system, and will provide early evaluation of the system and project progress. To ensure these Academic Implementers do not become lone champions struggling to implement and disseminate FACS, each institutional Project Team includes **Academic Leaders** who have committed to supporting the Academic Implementers in undertaking the trials, and raising the profile of their work throughout the institution. Lastly, an essential aim of this project is to harness feedback analytics to improve teaching practice and the student experience. Therefore, several institutional Project Teams include **Learning Analytics Researchers** to guide the collection, storage, querying and analysis of FACS data, and provide expertise on developing data visualisations. Each institutional team will be led by a **Project Co-Leader** (who may be have any one of the four above roles), who is responsible for driving the local implementation, dissemination and evaluation, and coordinating the institutional project team in regular (monthly) meetings.

The **Reference Group** will provide expert guidance and critique on project outcomes and deliverables as they develop, and support the promotion and dissemination of across broad networks. Specifically, **Ms Helen Drury** will promote, guide and assess the potential use of WRiSE resources in FACS trials and feedback interventions, and assist in qualitative analysis of changes in student writing to deepen our understanding of the learning gains underlying improvements in academic performance reported by FACS. **Dr Gwen Lawrie's** experience in developing the personalised feedback, and evaluating student use of these resources and the impacts on their subsequent academic performance, will be invaluable in critiquing our models of how students use feedback, and respond to feedback analytics visualisations that provide them with information on their feedback interaction behaviours. **Prof Geoff Crisp** and **Dr Mathew Hillier** will build the profile of the Harnessing Feedback project and support dissemination of project outcomes and deliverables, as well as critically review the models of feedback provision, use and academic performance, and guide the use of innovative in feedback interventions. **Prof Stephen Colbran**, will advise on utility of project findings for assessment innovators and users of digital feedback tools across the secondary and tertiary education sectors, as well as issues of how feedback analytics capabilities may be integrated into existing digital feedback tools. **Prof John Rice** and **Assoc Prof Liz Johnson** of the ACDS will provide critical review of project progress, maintaining its relevance to academics across the Australian science higher education sector, and provide support in disseminating the project outcomes and deliverables to Deans and Associate Deans (Academic) who have the academic leadership positions to enable sustainable

EVALUATION

Formative and summative evaluation will be conducted throughout the project using a phased, walk alongside, approach by the External Evaluator, Karen Sheppard, who is based at UQ and is experienced in the evaluation of large OLT projects and Fellowships in the area of assessment (e.g. ALTC National Teaching Fellowships for Geoff Crisp, Transforming Assessment). The

External Evaluator will fulfil two roles: 1) a "critical observer" involved in regular project meetings and monitoring progress, recording decision making processes, and offering regular formative feedback to the team; and 2) as an independent collector and analyser of data, reporting on project progress and outcomes.

A realist evaluation approach will be used throughout this project, to identify what works, for whom, and in what circumstances (Pawson & Tilley 1997). The realist perspective of project evaluation posits that programs achieve changes by enabling participants to make different choices, by changing their reasoning processes and access to resources. Further, programs produce different outcomes in different contexts because there is an interaction between the use of resources and reasoning, and contextual factors such as social, economic and political structures, and organisational, geographical and historical contexts. Therefore, the evaluation strategy will also characterise the contexts of each of the implementations, and relate these to the degree of engagement of participants and impact of the project on their feedback practices.

The evaluation will be conducted in three major stages:

Phase 1: Adaptation for adoption of FACS at each partner institution

Evaluate whether the entire Project Team is engaging with the project, participating in design decisions and implementation plans, and whether adaptations and adoption preparations are on track to meet implementation deadlines. (Evaluation Progress Report 1)

Phases 2-3: Evidence to support the project claims around implementation

Evaluation of engagement and impact, and of the potential for ongoing institutional support at all six institutions. Determine what works, for whom, and in what context. (Evaluation Progress Reports 2 and 3)

Phase 4: The project up-scales the sustainable use of FACS to inform and improve feedback strategies across the higher education sector

Evidence of the uptake of outcomes and deliverables by those outside the project team, across a diverse range of Australian and international universities, and of the potential for ongoing support at all institutions past the life of the project; expanded evaluation of what works, for whom, and in what contexts. (Evaluation Progress Report 4)

Qualitative and quantitative evaluation methods will be used throughout the project. Collection methods will include observations, surveys, and interviews of the Project Team, implementers (IT services staff, administrative staff, academics, markers and students), and participants in the dissemination workshops and symposia. Evaluation data will also be drawn from emails, project team meeting notes, logs of IT helpdesk requests and FACS development documentation, reports from each institutional Project Team, drafts and final papers submitted to journals and conferences. Evaluation reports at major stages of the project will inform later stages, and be used in quality assurance to document for the Project Team, Reference Group and OLT whether the project is on track to achieve proposed outcomes and deliverables.

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TIMELINE, BUDGET AND BUDGET JUSTIFICATION

Timeline

With the large-scale collaboration and aim to transform feedback practices across the Australian higher education sector, a 3 year timeline has been recommended by the OLT.

Date	Activities	Outcomes/Deliverables
Phase 1: Adaptation of FACS to enable wide-spread, sustainable adoption		
Feb-15	Adaptation of FACS	
Mar-15		
Apr-15		
May-15	Install FACS on local systems	Adapted, installed, integrated FACS + documentation
Phase 2: Staggered implementation of FACS across 6 Universities		
Jun-15	Training	Training documentation
Jul-15	Implementation 1 UQ, UAuckland, UEdinburgh	Evaluation Progress Report 1
Aug-15	IT help logs	
Sep-15	FACS + surveys; Feedback use studies; Quantitative pre-processing & modelling; Qualitative analysis	
Oct-15	Interviews	
Nov-15		Quantitative models; Refined FACS and documentation
Dec-15	Update FACS; Training; Integrate quantitative & qualitative models	
Jan-16	Refine data collection; Develop FACS database structure	Refined models (qualitative check)
	Implementation 2 UEdinburgh, UQ, UAuckland USydney, UniSA, Curtin	
Feb-16	IT help logs	
Mar-16	FACS + surveys; Feedback use studies; Develop visualisations from models; Quantitative modelling; Qualitative analysis	Symposium 1
Apr-16	Interviews	Evaluation Progress Report 2
May-16	Update FACS database structure	Refined FACS and documentation Interim Report for OLT
Jun-16	Refine data collection Training	Refined models; Methods for quantitative analysis
Phase 3: Trial FACS-based feedback interventions, increase dissemination		
Jul-16	Implementation 3 (feedback interventions)	Begin development of Guidelines
Aug-16	IT help logs	

Sep-16	FACS + surveys; Feedback use studies	Methods for qualitative analysis
Oct-16	Interviews (analyse impact of visualisations)	
Nov-16	Update FACS with trial dashboards	Production level FACS and documentation
Dec-16	Locally run training	Implementations running autonomously; Evaluation Progress Report 3
Phase 4: Production level implementation of FACS, feedback interventions, dissemination		
Jan-17	Implementation 4 (feedback interventions)	Generalisable and context dependent models
Feb-17	IT help logs	Symposium 2 Reference Group evaluation of Guidelines
Mar-17	FACS + surveys	Workshops across Australia, NZ and UK
Apr-17	Interviews (analyse impact of dashboards)	
May-17		Dashboard added to Production level FACS
Jun-17	Locally run training	Guidelines launched
Jul-17	Implementation 5 (feedback interventions)	Workshops across Australia, NZ and UK
Aug-17	FACS + surveys	
Sep-17	Interviews (analyse impact of dashboards)	
Oct-17		
Nov-17		
Dec-17	Locally run training	Evaluation Progress Report 4
Jan-18	Implementation 6	Final Report for OLT

Budget Justification

Personnel

In-kind contributions for Institutional Project Teams, IT resources and IT service staff:

The project will be led from UQ, where the Developer, Project Manager and Analysts will be based under the supervision of Project Leader Dr Kirsten Zimbardi. This will provide a level of centralised coordination and communication for all of the project teams at the partner institutions. With extensive expertise in the design, implementation and evaluation of FACS in the proof of concept trials, each of the six Academic Implementers on the UQ Project Team will be partnered up with an Implementation Team at a partner institution to provide regular support and mentoring. Each Project Team at the five partner institutions will also consist of a Co-Leader, IT Innovators, Academic Leaders, Academic Implementers and Learning Analytics Researchers. The UAuckland and UEdinburgh teams are suitably resourced and experienced to undertake the 1st round of trials, and contribute to the early troubleshooting (providing additional in-kind contributions). USydney, UniSA and Curtin, will then follow with a more refined implementation the following semester, and potentially greater training support from the UQ team. The variations in team composition, experience and cohort size across the institutions, result in small differences in the in-kind contributions in Academic staff time, IT resources and IT service staff time, as indicated in the budget.

Developer: An experienced Developer (HEW 7.01) is required for adaptation of FACS to a scalable, sustainable open-source system that is compatible with all devices and platforms. The adaptation will also involve supporting the local installations and integration with LMSs, which the Developer will document to ensure the final version of FACS can be adopted by additional universities without specialist support. The Developer will also develop a structured database for FACS data that ensures secure sharing of de-identified data across the partner institutions. The Developer will be guided in the responsibilities by the extensive development and learning analytics expertise on the Project Team. Initially employed at 1 FTE, reducing progressively to 0.2 FTE by the end of the first 18 months, when the minimal ongoing development responsibilities will revert to the Project Team.

Project manager: An experienced Project Manager (HEW 6.01 at 0.6 FTE for 3 years) is needed to organise daily project management for the duration of the project. This includes organising meetings, agendas, minutes and communications; liaising with the team members, External Evaluator and the Reference Group; assisting in survey and interview data collection and arranging transcription; developing and preparing reports, organising the Symposia and facilitating workshop arrangements. The Project Manager will work under the supervision of the Project Leader with broad direction from the Project Team.

Research Assistants: Two RAs (HEW 6.01 at 500 hours each), one focusing on qualitative analysis and the other on quantitative analysis, are required to analyse data collected during the implementations and feedback interventions. Employed on a casual basis, the RAs will collate and analyse from FACS, surveys, feedback use studies; as well as undertake interviews with academics, markers and students and analyse the recordings and transcripts.

Project Support

During the initial implementations, particularly at USydney, UniSA and Curtin, mentors from the UQ Project Team need to begin with at least one face to face meeting to ensure effective communication and support throughout the implementation. This initial travel will then be followed up with Skype and phone contact on a regular basis. Skype will also be used to maintain collaboration and communication with at least monthly for meetings of the Project Leader with institutional Leaders. The interviews and feedback use studies will require incentives to ensure participation of students with diverse levels of academic achievement (the budget allows for $50 gift card incentives for participation of 80 students across the 6 institutions and 5 semesters of implementation). Transcription of audio annotations (~120 assessment items (average of 3 minutes (6x 30 second) audio annotations per assessment item) and key sections of interviews (~8 hours) and feedback use studies (12 hours) will also be needed to facilitate qualitative analysis (based on standard transcription of good quality audio at $2.65/min +GST).

Project Activities

With the majority of the Project Team and Reference group communication occurring via Skype, two Symposia are planned to bring 1-2 members of each institutional team, together with the Reference group, to share the details of their work with each other and promote their work more broadly. The External Evaluator will also use the Symposia for substantial data collection. To further the engagement of a distributed network, funding is also requested to support partner and non-participating member institutions in hosting workshops to promote the project and engage potential implementers. The External Evaluator will be actively engaged in the project on a regular basis to ensure the project progress stays on track, over the 3 years. The compulsory $3000 has been budgeted for attendance at OLT events, and $3000 for editing and layout of the final report.

OLT GRANTS 2014: BUDGET FORMAT

Refer to the 2014 Program information and application instructions document for assistance
On completion please copy this table into your proposal.

All costs should be ex GST and in whole dollars only

		Budget Stage 1/Year 0-1.5			Budget Stage 2/Year 1.5-3		
		OLT	*Other $*	*Total $*	*OLT*	*Other $*	*Total $*
A.	**PERSONNEL**			-			-
	UQ Project Team		79,200	79,200		63,600	63,600
	USydney Project Team		61,400	61,400		55,300	55,300
	UniSA Project Team		55,300	55,300		49,800	49,800
	Curtin Project Team		55,700	55,700		50,200	50,200
	UAuckland Project Team		64,300	64,300		57,800	57,800
	UEdinburgh Project Team		58,100	58,100		52,300	52,300
	Project Manager (0.6 FTE HEW 6 + oncosts)	72,500		72,500	72,500		72,500
	IT Developer (0.75 FTE HEW 7 + oncosts)	106,700		106,700			-
	Research Assistant - Qualitative (500 hours @ HEW 6 + oncosts)	22,350		22,350			-
	Research Assistant - Quantitative (500 hours @ HEW 6 + oncosts)	22,350		22,350			-
	Sub total for section A	*223,900*	*374,000*	*597,900*	*72,500*	*329,000*	*401,500*
B.	**PROJECT SUPPORT**			-			-
	Project managment meetings - Skype	100		100	100		100
	Travel (Mentor & Project Manager for Sem 1 2016 implementations)	6,000		6,000			-
	Transcription	2,650		2,650	2,650		2,650
	Incentives for students	2,000		2,000	2,000		2,000
	Consumables, stationary		1,800	1,800		1,800	1,800
	Sub total for section B	*10,750*	*1,800*	*12,550*	*4,750*	*1,800*	*6,550*
C.	**PROJECT ACTIVITIES**			-			-
	UQ IT resources + support		23,800	23,800		21,600	21,600
	USydney IT resources + support		22,200	22,200		24,300	24,300
	UniSA IT resources + support		19,100	19,100		21,200	21,200
	Curtin IT resources + support		21,400	21,400		23,800	23,800
	UAuckland IT resources + support		25,500	25,500		22,000	22,000
	UEdinburgh IT resources + support		24,200	24,200		21,300	21,300
	External evaluator	7,500		7,500	7,500		7,500
	1 domestic (international/national) conference per institutional project team			-	24,400		24,400
	Symposium travel and accommodation for Reference Group	8,600		8,600	8,600		8,600
	Symposium travel and accommodation for Project Team	13,000		13,000	13,000		13,000
	Symposia venue hire, catering, promotional materials	5,250		5,250	5,250		5,250
	Workshops (hosted by NPM)			-	15,000		15,000
	Website (GitHub - free open source)	-		-	-		-
	Cash contributions $10,000/institution (Local & national dissemination and project profile building)			-		60,000	60,000
	Sub total for section C	*34,350*	*136,200*	*170,550*	*73,750*	*194,200*	*267,950*
D.	**OLT COMPULSORY ITEMS**			-	-		-
	Attendance at OLT events*	3,000		3,000	-		-
	Editing costs**			-	3,000		3,000
	Sub total for section D	*3,000*	*-*	*3,000*	*3,000*	*-*	*3,000*
E.	**INSTITUTIONAL OVERHEAD LEVY** @						
	Sub Total						
	Total per Stage/Year	272,000	512,000	784,000	154,000	525,000	679,000

	OLT	Other	Total
TOTAL PROJECT BUDGET #	426,000	1,037,000	1,463,000

* The $3,000 for OLT events must be claimed for full proposals as a single amount in year 1 only. Not required for Seed
** The $3,000 for editing costs for full proposals must be claimed as a single amount in year 2. Seed projects claim $1,000 only.

@ Institutional overhead levy cannot be more than 10% of the combined sub-total for sections A, B, C, D.

\# Round the total up or down to the nearest thousand and then adjust ONE line item so the sub-totals add up to the total.

QUALIFICATIONS

The University of Queensland

Project Leader - Dr Kirsten Zimbardi, PhD, BSc (Hon), GCHEd is an early career academic, a UQ Teaching Fellow and co-leader for an OLT Leadership Project, with an international profile in using undergraduate research experiences and inquiry-based curricula to develop students' skills in scientific reasoning, and an emerging profile in assessment and feedback analytics. *Role: Project Leader,* commitment 1.5 days/week (Current OLT: LE12-2279).

Prof Phillip Long, PhD, AB Psychobiology (Hon) is the Director of the Centre for Educational Innovation & Technology (CEIT), Co-founder and Executive Member of the Society for Learning Analytics Research (SOLAR) and international leader in using emerging technologies to enhance engagement and learning. *Role: IT Innovator, Academic Leader,* commitment 1.5 days/month. (Current OLT: ID13-2840)

Mr Andrew Dekker BIT Hons, BMultimedia Design, BInfEnv. Senior Developer, UQx, Director of Ably Digital Design, winner of the Govhack 2013 National Award. Andrew developed FACS, working extensively with academic implementers in 2011-2013, and continues to support its implementation. Andrew will guide the Project Developer, and resume the role of Developer after FACS is at production level. *Role: IT Innovator, Lead Developer,* commitment 1 day/week.

Dr Craig Engstrom, PhD, MSc, BHMS(Ed)(Hon), was an original creator of UQMarkUp v 1.0, has been a Chief Investigator on grants ~$1.5 million over the current 5-yr funding cycle, and holds a UQ T&L Excellence Commendation. *Role: Academic Mentor,* commitment 1 day/month.

Dr Kay Colthorpe, **Dr Andrea Bugarcic**, **Assoc Prof Lesley Lluka** (Current OLT: ID13-3016), **Dr Prasad Chunduri** (Current OLT: ID13-3016), **Ms Judit Kibedi,** *Role: Academic Mentors, Academic Implementers,* commitment 0.5-1 day/fortnight.

University of Sydney

Co-Leader - Prof Philip Poronnik, PhD, GCHEd is an ALTC Associate Fellow, leader of CUBEnet (Collaborative Universities Biomedical Education Network), member of the National Committee on Biomedical Science for the Australian Academy of Science, and Australian Physiological Society Roberts Award for Excellence in Teaching winner. *Role: Institutional Team Leader, Academic Leader,* commitment 1 day/fortnight. (Current OLT: SI11-2119, SP13-3258)

Dr Charlotte Taylor is a leader of the OLT funded VIBE.net (Vision and Innovation in Biology Education), awarded an OLT Citation for Outstanding Contributions to Student Learning *Role: Academic Leader,* commitment 1 day/month. (Current OLT: SI11-2122, Completed: CG7-476)

Mr Jim Cook has extensive experience innovating operational aspects of the USydney IT services. *Role: IT Innovator,* commitment 1 day/fortnight.

Dr Abelardo Pardo is a steering committee member for SoLAR, specialising in learning and behavioural analytics and personalization of learning experiences *Role: Learning Analytics Researcher,* commitment 1 day/fortnight. (Current OLT: ID13-2840, ID13-2901)

Dr Danny Lui, Dr Tina Hinton, Dr Margot Day, Dr Meloni Muir *Role: Academic Implementers,* commitment 0.5-1 day/fortnight.

University of South Australia

Co-Leader - Assoc Prof Shane Dawson, PhD, Director of the UniSA Learning & Teaching Unit, is a Co-founder and Executive Member of SOLAR, currently Deputy Director of Academic Learning Services, with OLT-funded projects in using learning analytics to inform teaching and learning theory and practice. Shane co-ordinates the application of educational technologies in learning and teaching practice across the institution. *Role: Institutional Team Leader, IT Innovator,*

Academic Leader, Learning Analytics Researcher, commitment 1 day/fortnight. (Current OLT: ID13-2901, ID13-3068, SP13-3249, Completed: CG7-492, CG9-994)

Assoc Prof Dragan Gasevic, is an executive committee member for SoLAR, with an adjunct appointment at UniSA and Canada Research Chair in Semantic Technologies. *Role: Learning Analytics Researcher, commitment 1 day/fortnight.* (Current OLT: ID13-2901, SP13-3249)

Additional Academic Implementers will be sought toward the end of 2015 for implementations in Semester 1 2016 that compliment the contexts of earlier trials and data collections.

Curtin University

Co-Leader - Dr Daniel Southam, PhD, BAppSc(Hons) is Director of First Year Studies in Chemistry leading SoTL projects in the effective use of technology in assessment to improve students' perceptions and deep enjoyment of science. *Role: Institutional Team Leader, Academic Implementer, commitment 1 day/fortnight.*

Assoc Prof David Gibson, Ed.D in Leadership & Policy Studies Director of Learning Engagement, Office of DVCE, David is Vice President of the Society for Information Technology and Teacher Education (SITE) and International Program Chair of the 2015 EDUsummIT. *Role: IT Innovator, Learning Analytics Researcher, commitment 1 day/month.* (Current OLT: SP13-3236)

Prof Sara de Freitas, Associate Deputy Vice-Chancellor, Teaching, Office of DVCE, Sarah won the Most Influential Woman in Technology (US Fast Company) in 2009 and 2010. *Role: Academic Leader, Learning Analytics Researcher, commitment 1 day/month.*

Dr Connie Price, Manager of eAssessment, Office of DVCE. *Role: Academic Leader, IT Innovator, commitment 1 day/month.* (Current OLT: SD12-2502)

University of Auckland, New Zealand

Co-Leader – Dr Steve Leichtweis is the Manager for the Centre for the Creative Application of Technology in Education (CreATE), Faculty of Education, which is focused on researching and implementing innovative and pedagogically sound technologies in the classroom, and building digital literacy and capability among Faculty of Education staff and students. Steve has over a decade of experience driving technology innovation in university education. *Role: Institutional Team Leader, IT Innovator, Academic Leader, Learning Analytics Researcher, commitment 1 day/fortnight.*

Associate Professor Cathy Gunn MSC HCI, PhD Computer based learning, PG-Dip Industrial Admin is Deputy Director and Head of eLearning, at the Centre for Learning and Research in Higher Education (CLeaR), which provides institutional leadership in teaching, learning and pedagogical research. As Head of eLearning, Cathy leads a diverse team that builds elearning capacity across the university. Cathy leads higher education academic development courses in Australia, UK, Hong Kong and New Zealand, and held two terms as elected President of Ascilite (2004-2008). *Role: IT Innovator, Academic Leader, commitment 1 day/month.*

Dr Rena Heap, Dr Ros Sullivan, **Dr Jason Stephens, Ms Bronwen Pearson**, *Role: Academic Implementers, commitment 0.5-1 day/fortnight.*

University of Edinburgh, Scotland

Co-Leader - Ms Anne-Marie Scott PGDip, MA (hons) Technology Enhanced Learning Services Manager, Information Services, responsible for the delivery of centrally-supported TEL services, and co-author of the Information Services Technology Enhanced Learning Strategy. Anne-Marie has over 20 years experience in service and project management experience, and research interest the use of analytics as a form of feedback to students. *Role: Institutional Team Leader, IT Innovator, Learning Analytics Researcher, commitment 1 day/week.*

Professor Susan M Rhind BVMS, PhD, FRCPath, PFHEA, MRCVS, Director of Veterinary Teaching, Royal (Dick) School of Veterinary Studies. Director of Veterinary Teaching, Deputy Head of School and Head of the Division of Veterinary Medical Education at the Royal (Dick) School of Veterinary Studies, University of Edinburgh. Susan has successfully led several SoTL projects on assessment and feedback including audio feedback, peer assessment and assessment standard setting. *Role: Academic Implementer, commitment 1 day/fortnight.*

Mr Mark Wetton BA(hons), Head of Learning Services, Information Services. Head of IS Learning Services, Mark is a member of Senatus Learning and Teaching Committee, Learning Technology Advisory Group and Horizon Scanning group, UK Heads of e-Learning Steering Group, and co-author of the Information Services Technology Enhanced Learning Strategy. Mark is the University project leader for the national e-learning enhancement HEA Transforming Assessment Pilots 2013-14, and EU collaboration (ARMAZEG 2014 - 17). *Role: Academic Leader, IT Innovator, commitment 0.5 days/month.*

Dr Neil Lent PhD, MSc, BSc (Hons), Lecturer in University Learning and Teaching, Institute for Academic Development, Research Director of extensive evaluation of the Quality Enhancement Framework for learning and teaching in Scottish higher education, with a focus on enhance assessment and feedback practices. *Role: Academic Leader, commitment 0.5 days/month.*

Prof Susan Rigby Phd, MA, Vice Principal Learning and Teaching. Sue has a long history of leadership in learning and teaching. Sue has been Vice Principal for Learning and Teaching at the University of Edinburgh since 2012, and is a Principal Fellow of the Higher Education Academy with expertise in the creation of learning contexts physically and online. *Role: Academic Leader, commitment 0.5 days/month.*

Reference Group

Ms Helen Drury has led the development of ALTC-funded writing reports in science and engineering (WRiSE) resources, and has extensive experience in diagnosing problems that science students encounter in learning the scientific genre. (Current OLT: ID12-2409, Completed: CG6-30, CG10-1713, ID11-2048)

Dr Gwen Lawrie has experience in developing the personalised feedback, and evaluating student use of these resources and the impacts on their subsequent academic performance, through her current OLT project on using formative feedback and self-regulated learning to ease the first year transition. (Current OLT: ID12-2277, LE12-2279, CG9-1112)

Prof Geoff Crisp and **Dr Mathew Hillier** have extensive networks and expertise in the use of interactive online assessment to improve student learning through Geoff's 2009 ALTC National Fellowship and the ongoing Transforming Assessment network. (Current OLT: Crisp: PP10-1775, SP10-1879, Hillier: SD13-2885, Completed OLT: Crisp: PE7-546, PP6-46)

Prof Stephen Colbran, is the creator ReMarksPDF (ALTC-funded), a commercial feedback and marking tool with FACS features for providing large cohorts with multi-modal feedback, but without the capacity to collect evidence on how students access the feedback. Stephen has an extensive knowledge in creating and marketing digital feedback tools across the secondary and tertiary education sectors. (Completed OLT: LE6-3, PP7-542, PP9-1593, PP10-1751)

Prof John Rice is Executive Director the Australian Council of Deans of Science (ACDS) has many years of experience with science assessment, including authoring the OLT Good Practice Guide on Assessment in STEM. **Assoc Prof Liz Johnson,** a 2012 OLT National Fellow, is the Director of the ACDS Centre for Teaching and Learning, focussed on supporting and promoting excellence in SoTL to enrich the science curriculum. (Current OLT: MS13-3181, LE11-1967; Completed OLT: CG8-763)

1 June 2014

Ms Di Weddell
General Manager
Office for Learning and Teaching
Level 10, 255 Elizabeth Street
Sydney NSW 2000

Dear Ms Weddell,

RE: Harnessing feedback analytics to improve feedback provision, student engagement with feedback and academic performance

We are very pleased to support this project led by Kirsten Zimbardi which aims to improve the efficacy of assessment feedback to student. The project builds on the development of Feedback Analytics Capture System (FACS) at the University of Queensland. This is a web tool designed to provide multidimensional feedback to students which in turn, generates data for learning analytics to probe the learning behavior of students. The current project will use data collected from implementation of the system across four Universities to develop guidelines for effective feedback based on the reality of student learning in each context. Implementation of the project will increase the understanding and capacity of participating staff and colleagues through a deeper, grounded view of the effects of assessment. The project channels the power of learning analytics into the perennial problem of effective feedback on assessment.

In an environment that asks higher education to deliver teaching that is both efficient and high-quality, this is a welcome initiative. University teachers need tools that address immediate practical problems and that also build towards a greater understanding of effective learning design. Students need learning and teaching strategies that connect with their objectives and make best use of their time and effort. Expansion of the system to multiple universities will test the application in various contexts and develop mechanisms for local adaptation.

The project team assembled for this project builds on the core group at the University of Queensland that developed the prototype online system for assessment feedback (UQMarkUp). The leaders of this group are very active in the learning and teaching community and, together with their collaborators at partner Universities have excellent links for dissemination.

Yours sincerely

Professor John Rice
Executive Director, ACDS
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john.rice@sydney.edu.au

Associate Professor Elizabeth Johnson
Director, ACDS Teaching and Learning Centre
+61 488 000 316
e.johnson@latrobe.edu.au

4th June 2014

Office of the Deputy Vice-Chancellor
(Academic)
Deputy Vice-Chancellor (Academic)
Professor Joanne Wright
PhD *ANU* MLitt *Aberdeen* Joint Honours *Kent*
CRICOS PROVIDER NUMBER00025B

Ms Suzi Hewlett
General Manager
Office for Learning and Teaching
Level 10, 225 Elizabeth Street
Sydney NSW 2000

Dear Ms Hewlett

Title of the OLT Project Application:

Harnessing feedback analytics to improve feedback provision, student engagement with feedback and academic performance.

Project Leader:

Dr Kirsten Zimbardi. Lecturer, School of Biomedical Sciences, The University of Queensland.

UQ Project Team:

Professor Phillip Long. Director of the Centre for Educational Innovation & Technology (CEIT), The University of Queensland.

Dr Kay Colthorpe. Lecturer, School of Biomedical Sciences, The University of Queensland.

Dr Andrea Bugarcic. Postdoctoral research scientist, Institute for Molecular Biosciences (IMB), The University of Queensland.

Dr Craig Engstrom. Lecturer, School of Human Movement Studies, The University of Queensland.

Associate Professor Lesley Lluka. Associate Professor, School of Biomedical Sciences, The University of Queensland.

Dr Prasad Chunduri. Associate Lecturer, School of Biomedical Sciences, The University of Queensland.

Ms Judit Kibedi. Associate Lecturer, School of Biomedical Sciences, The University of Queensland.

Aims of the Project:

This project aims to understand factors that impact on student engagement with, and effective use of, digital, multimodal feedback on their electronic assessment items. We will use this information to provide academics with access to quantitative and qualitative evidence to facilitate students' effective engagement with feedback, through guidelines and interactive feedback analytics visualisations.

Alignment with Institution's aims and priorities:

The University of Queensland Strategic Plan 2013-2017 prioritises Strategy 3.4: *Enhance the quality and rigour of assessment practices and ensure the provision of high-quality and timely feedback*. The current project team from UQ has developed, and extensively trailed a feedback analytics capture system (FACS, previously known as UQmarkUp). Overall, FACS has been used 2012 - 2014 in 10 large undergraduate courses at 1st, 2nd and 3rd year levels in biomedical science involving 85 markers, marking over 8,000 assessment items of diverse genres, for over 3,000 students, and demonstrated statistically significant improvements in academic performance across successive, related

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assessment items. The current project, aims to further this work across UQ, nationally and internationally though collaborations with five partner universities, to understand the relationships between specific patterns in feedback provision, feedback use by students, and improvements in academic performance, for a diverse array of students - from those who excel academically, to students who have struggled in their academic careers. Ultimately, this project will be used to lead an evidence-based transformation in feedback practices across the higher education sector.

In addition, the UQ Strategic Plan 2013-2017 outlines the institutional priority to support opportunities and experiences that foster key skills amongst students (Learning Plan: Theme 1, Strategy 1.2: *Support a suite of opportunities and experiences that foster key skills and prepare students for future leadership roles*) and improve participation and success of students from low SES and Indigenous backgrounds (Learning Plan: Theme 1, Strategy 1.4: *Seek to attract, support and retain high-achieving students, and prioritise the need to improve the participation and success of students from low SES and Indigenous backgrounds*). To do so, it is vital that students receive rich feedback in their assessment tasks, and be given the best chance to engage with this feedback to improve participation and academic performance, which will in turn pave the way for developing, and progressively improving, new skills. Finally, the current project will position UQ academics as international leaders in feedback analytics, raising the profile of excellence at UQ in using the scholarship of teaching to improve the student experience and academic outcomes (Learning Plan: Theme 2, Strategy 2.3: *Support the scholarship of teaching and the development and evaluation of innovative teaching practices that improve student outcomes*).

If the application is successful The University of Queensland agrees to abide by the terms of the funding agreement

The University of Queensland will notify OLT if there are any changes in the team member(s)' from The University of Queensland circumstances which may impact on his/her eligibility to participate in, or ability to perform, the project subsequent to the submission of this proposal.

Certification by the DVC(A)

I certify that the application:

• Meets the eligibility criteria as specified in the relevant 2014 program and operational information, and application instruction
• Complies with the relevant 2014 program and operational information, and application instructions and if the application is successful The University of Queensland agrees to abide by the terms of the funding agreement
• The University of Queensland will notify OLT if there are any changes in the project leader's circumstances which may impact on his/her eligibility to participate in, or ability to perform, the project subsequent to the submission of this proposal

Yours sincerely

Professor Joanne Wright
Deputy Vice Chancellor (Academic)

Professor Pip Pattison
Deputy Vice-Chancellor (Education)
Office of the Deputy Vice-Chancellor, Education

12 June 2014

Di Weddell
General Manager
Office for Learning and Teaching
Department of Industry, Innovation, Science, Resources and Tertiary Education
Level 10, 255 Elizabeth Street
SYDNEY NSW 2000

Dear Di,

On behalf of The University of Sydney I am writing to indicate my support for a proposal for grant funding under the Office for Learning and Teaching's Innovation and Development grant scheme entitled: "Harnessing feedback analytics to improve feedback provision, student engagement with feedback and academic performance". This project is to be led by The University of Queensland (Dr Kirsten Zimbardi) in collaboration with UniSA, Curtin University, the University of Auckland and the University of Edinburgh. The University of Sydney team lead is Professor Philip Poronnik and the other team members are Dr Meloni Muir, Dr Margot Day, Dr Tina Hinton, Dr Charlotte Taylor, Dr Danny Lui, Dr Abelardo Pardo and Mr Jim Cook.

This project aims to understand factors that impact on student engagement with, and effective use of, digital, multimodal feedback on their electronic assessment items. We will use this information to provide academics with access to quantitative and qualitative evidence to facilitate students' effective engagement with feedback, through guidelines and interactive feedback analytics visualisations.
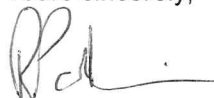
This project aligns with the University of Sydney's strategy to develop systems that can demonstrate the quality of students at the degree level, by focussing on the processes by which the standards applied to assessments can be monitored and benchmarked against national discipline standards.

For the above reasons, I am delighted to endorse the participation of The University of Sydney team in this project as indicated in the budget justification.

I certify that:

- If the application is successful The University of Sydney agrees to abide by the terms of the funding agreement.
- The University of Sydney will notify OLT if there are any changes in the team member(s)' circumstances which may impact on his/her eligibility to participate in, or ability to perform, the project subsequent to the submission of this application

Yours sincerely,

Professor Pip Pattison
Deputy Vice-Chancellor (Education)

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ABN 15 211 513 464
CRICOS 00026A

4 June 2014

Ms Di Weddell
Acting Manager
Office for Learning and Teaching
GPO Box 9880
Sydney NSW 2001

Dear Ms Weddell

The University of South Australia (UniSA) is pleased to support the OLT Innovation and Development Grant application titled *Harnessing feedback analytics to improve feedback provision, student engagement with feedback and academic performance,* led by Dr Kirsten Zimbardi from The University of Queensland.

This project aims to investigate the factors that impact on student engagement with, understanding, and interpretation of digital, multimodal feedback on electronic assessment items. The project team will use the findings to better inform teaching staff of the processes and practices that can facilitate students' effective engagement with feedback.

The project aligns strongly with the aims and priorities expressed in the University's Strategic Action Plan; *Crossing the Horizon 2013-2018,* as outlined in *Action Set 1: Enhanced educational offerings and an outstanding student experience*. This proposal will assist the institution in realising these goals by extending the reach of our online and blended learning practices.

UniSA will support the time commitment of Associate Professor Shane Dawson (0.05 FTE) as detailed in the project application and budget.

I certify that:
- If the application is successful UniSA agrees to abide by the terms of the funding agreement.
- UniSA will notify OLT if there are any changes in the circumstances of Associate Professor Dawson which may impact on his eligibility to participate in, or ability to perform, the project subsequent to the submission of this proposal.

Yours sincerely

Professor Allan Evans
Provost & Chief Academic Officer

9th June 2014

Ms Di Weddell
General Manager
Office for Learning and Teaching
Level 10, 255 Elizabeth Street
Sydney NSW 2000

Dear Ms Weddell

Title of the application: **Harnessing feedback analytics to improve feedback provision, student engagement with feedback and academic performance**

Category of grant program: **Innovation and Development**

Title, name, position and institution of the project leader(s): **Dr Kirsten Zimbardi. Lecturer, School of Biomedical Sciences, The University of Queensland**

Title, name and position of team members from Curtin University: **Dr Daniel Southam, Director of First Year Studies, Department of Chemistry; Assoc Prof David Gibson, Director of Learning Engagement, Office of DVCE; Prof Sara de Freitas Associate Deputy Vice-Chancellor, Teaching, Office of DVCE; Dr Connie Price Manager of eAssessment, Office of DVCE.**

The aim of this project is to explore how, where, and when students engage with feedback in a digital paradigm. Provision of marking via many modes provides both marker and student many ways to engage with electronic assessment items. We intend to explore relationships between quantitative and qualitative evidence of feedback use, and how these data may be used to within broader learning analytics models.

This project fits within Curtin's university-wide strategy *Transforming Learning at Curtin,* which applies innovative thinking to our learning and teaching by embracing educational technologies that support and enhance student success. The primary goal of this project, to develop a tool that provides rich and personalised feedback to students, while simultaneously capturing their usage patterns, will allow us to explore the role of feedback in a student's lifecycle.

Curtin University will support the time commitment of the team members from Curtin University as indicated in the budget/budget justification. No additional teaching or other relief will be required as the aims of this project align well with the normal duties of the aforementioned staff.

I certify that the application:

- Meets the eligibility criteria as specified in the relevant 2014 program and operational information, and application instruction

- Complies with the relevant 2014 program and operational information, and application instructions and if the application is successful [name of lead institution] agrees to abide by the terms of the funding agreement

- The University of Queenslad will notify OLT if there are any changes in the project leader's circumstances which may impact on his/her eligibility to participate in, or ability to perform, the project subsequent to the submission of this application

Yours sincerely

Professor Jill Downie
Deputy Vice –Chancellor, Education

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CRICOS Provider Code 00301J (WA), 02637B (NSW)

OFFICE OF THE VICE-CHANCELLOR

John Morrow MA, PhD
Deputy Vice-Chancellor (Academic)

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24 Princes Street

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Auckland 1142, New Zealand

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4 June 2014

Ms Di Weddell
General Manager
Office for Learning and Teaching
GPO Box 9880
SYDNEY NSW 2001
Australia

Dear Ms Weddell,

I am pleased to support our involvement in the University of Queensland's Innovation and Development grant application entitled "Harnessing feedback analytics to improve feedback provision, student engagement with feedback, and academic performance". The project will be led in the Faculty of Education at the University of Auckland by Dr. Steve Leichtweis, Manager for the Centre for the Creative Application of Technology in Education.

This project aims to understand factors that impact on student engagement with and use of digital and multimodal lecturer feedback on their electronic assignment submissions. The intention is to provide effective qualitative and quantitative evidence to academics to facilitate students' engagement with assignment feedback. This OLT proposal is designed to draw upon recent advances in educational data mining and learning analytics research methods to further the current understanding of the relationships between feedback provision, feedback usage and improvements in student performance on assessment tasks.

In common with the Australian higher education sector, improving student feedback provision is a high priority activity for the University of Auckland. This project proposal aligns very well with key outcomes from the University of Auckland's Learning and Teaching Plan (2013 – 2016) and to its wider goals around excellence in teaching and student achievement.

The University of Auckland supports the involvement of the following team members in the project as outlined in the proposal:

- Dr. Steve Leichtweis, Manager for the Centre for the Creative Application of Technology in Education (CreATE).
- Associate Professor Cathy Gunn, Deputy Director and Head of eLearning at the Centre for Learning and Research in Higher Education (CLeaR).
- Dr. Rena Heap, Senior Tutor in the School of Curriculum and Pedagogy at the Faculty of Education.
- Dr. Jason Stephens, Senior Lecturer in the School of Learning, Development and Professional Practice at the Faculty of Education.
- Dr. Ros Sullivan, Senior Lecturer in the School of Curriculum and Pedagogy at the Faculty of Education.

I certify that:

- If the application is successful the University of Auckland agrees to abide by the terms of the funding agreement
- The University of Auckland will notify OLT if there are any changes in the team member(s)' from the University of Auckland circumstances which may impact on his/her eligibility to participate in, or ability to perform, the project subsequent to the submission of this proposal.

On behalf of Professor John Morrow
Deputy Vice Chancellor (Academic)

Dr Kevin Morris
Director – Learning & Teaching

26 May 2014

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Suzi Hewlett
General Manager
Office for Learning and Teaching
GPO Box 9880
SYDNEY NSW 2001
Australia

Dear Ms Hewlett,

I am pleased to support the Innovation and Development grant application entitled *"Harnessing feedback analytics to improve feedback provision, student engagement with feedback, and academic performance"*. The project is led at The University of Edinburgh by Ms Anne-Marie Scott, Technology Enhanced Learning Services Manager in the Information Services support group.

This project aims to understand factors that impact on student engagement with, and effective use of, digital, multimodal feedback on their electronic assessment items. This information will be used to provide academics with quantitative and qualitative evidence to facilitate students' effective engagement with feedback, through guidelines and interactive feedback analytics visualisations.

In common with the Australian higher education sector, improving student feedback provision is a high priority activity within UK universities, driven by lower levels of student satisfaction in feedback and assessment than with other aspects of teaching and learning. This proposal aligns very well with The University of Edinburgh's priorities and planned assessment and feedback initiatives and contributes to strategic goals around excellence in education and outstanding student experience.

The University of Edinburgh's *Feedback Standards and Guiding Principles* describe effective feedback for students as "prompt, informative, helpful, and acted upon", and that all teachers and assessors are expected to "reflect on, review and update their expertise in feedback". The OLT proposal is designed to provide insight into how students act upon the feedback they are given through characterising their patterns of access, and will shed light on how informative and helpful feedback is by measuring impact on subsequent academic performance. Providing academics, markers and students with access to guidelines and tools capable of generating personalised, interactive feedback analytics visualisations will promote reflective practices, increase staff knowledge and expertise, and facilitate timely interventions. In doing so across six partner institutions the project team aim to develop and validate tools and guidance that could then be used in other universities.

The University of Edinburgh supports the involvement of the following team members in the project as outlined in the proposal:

- Ms Anne-Marie Scott, Technology Enhanced Learning Services Manager, Information Services
- Professor Susan Rhind, Deputy Head of School – Teaching, The Royal (Dick) School of Veterinary Studies
- Mr Mark Wetton, Head of Learning Services, Information Services
- Dr Neil Lent, Lecturer (University Learning and Teaching), Institute for Academic Development

I certify that:

- If the application is successful, The University of Edinburgh agrees to abide by the terms of the funding agreement.
- The University of Edinburgh will notify OLT if there are any changes in the team member(s)' from The University of Edinburgh circumstances which may impact on his/her eligibility to participate in, or ability to perform, the project subsequent to the submission of this proposal.

Dr Susan Rigby
Vice Principal Learning and Teaching