Successful grant proposal submitted to OLT 2013 Seed Projects, Round 2

**Professional development for academics: Evaluating a personalised mobile website for learning from student feedback**

**Chief investigators**
Dr Martin Tomitsch  
Dr Jen Scott Curwood  
Dr Kate Thomson  
Dr Graham Hendry  
All CIs are from the University of Sydney

**Aim**
This projects aims to develop and evaluate a mobile website for supporting early career academics’ professional learning from their student evaluation of teaching (SET) results.

**Abstract**
This project develops and evaluates a world-first mobile website for supporting early career academics’ professional learning from their student evaluation of teaching (SET) results. The traditional approach has involved individual face-to-face consultations, which is labour and time-intensive, and does not necessarily provide all academics with ‘just in time’ support. This project will use an interactive mobile website that anticipates academics’ learning needs and personalises recommended teaching strategies by harnessing SET database information. The website will provide networking opportunities for peer interaction, a key strategy recommended for enhancing traditional SET consultation. It is sustainable and scalable because it will initially focus on SET data in the key area of assessment quality. The project draws on design-based research methods to examine early career academics’ experiences of using the website and changing their practice over time. The deliverables include the mobile website, a project website featuring a blog for SET coordinators and administrators, and a project report.

**Keywords**
Assessment, best practice, design-based research, early career academics, mobile solution, mobile website, peer interaction, professional development, student evaluation of teaching, student feedback, teaching strategies.

**Program Priorities Addressed**
Innovation and Development Program – Innovative use of technology in learning and teaching – development of use of mobile solutions to support learning and teaching; Seed Projects – build the capacity of early career academics, including projects which are led by early career academics.
Project Outcomes and Rationale

This project **develops and evaluates** a world-first **mobile website** for supporting early career academics’ **professional learning** from their student evaluation of teaching (SET) results. Working with individual academics on their SET results to identify appropriate teaching strategies for these academics to pursue is effective for professional learning (Marsh & Roche, 1993; Penny & Coe, 2004). Traditionally, this approach has involved individual face-to-face consultations, which is labour and time-intensive, and does not necessarily provide all academics with ‘just in time’ support. This project will use an interactive cross-platform mobile website to provide timely and relevant support in a way that is more effective and pedagogy-driven than the traditional approach.

This single-institution, small-scale project addresses an **Innovation and Development Program** priority by evaluating the effectiveness of a **mobile solution** in providing SET results to early career academics, and identifying relevant and appropriate new teaching strategies linked directly to these results for academics to pursue. This project also addresses a **Seed Projects** priority by **building the capacity of early career academics** through an interactive mobile website that personalises recommended teaching strategies and delivers ‘point of need’ support (see Design Specifications). The website will:

- **Anticipate** early career academics’ immediate professional learning needs (Chambers, Threlfall & Roper, 2012) by harnessing SET database information on class size, year level and discipline;
- **Engage** academics through rich content, active control and connectedness (Coursaris & Sung, 2012);
- **Provide** just-in-time support by delivering personalised, pedagogy-driven resources at the same time as an academic’s student feedback; and
- **Provide** networking opportunities for peer interaction, a key strategy recommended for enhancing traditional face-to-face SET consultation (Penny & Coe, 2004).

Using a mobile website further meets early career academics’ ongoing professional learning needs as they strive to overcome teaching problems in everyday settings and move between using smartphones, and tablet and desktop computers, at work and home (Sharples, Taylor & Vavoula, 2005). The project is **led by an early career academic**, Dr Martin Tomitsch, University of Sydney, who has significant experience in designing and developing mobile applications and websites.

The current project **builds on existing knowledge** about individually structured interventions to enhance teaching effectiveness by creating a software application of Marsh and Roche’s (1993) paper-based ‘idea packets’ of recommended teaching strategies that were provided to academics on the basis of their SET results. This project **advances** our knowledge by utilising the latest evidence-based digital resources and video-supported exemplars of best practice, which will be linked directly to academics’ SET results in an interactive and appealing design. It **pilots a sustainable and coherent** approach by initially targeting **assessment**, which is arguably the most important element of university curricula for teachers and students (Joughin, 2010). Early career academics find responding to assessment SET results particularly challenging partly because they perceive “that there is little incentive” for innovation (Norton, Norton & Shannon, 2013).

---

1 Mobile websites are optimised for smaller screen display (e.g., smartphones and tablet computer screens) and include features like ‘click-to-call’.
Key questions that the project aims to answer are:

- How effective is an interactive mobile website in helping early career academics improve their assessment practices in different contexts?
- What combinations of digital resources and exemplars of best practice in assessment provide incentive and support for early career academics to improve their pedagogy?

This project draws on design-based research methods (Barab & Squire, 2004; Design-Based Research Collective, 2003), which focus on continuous cycles of design, enactment, analysis, and redesign, within education. Rather than concentrating exclusively on the design process or the educational artefact, design-based research aims to advance theoretical understandings of teaching and learning. This project will examine how early career academics’ experiences of interpreting SET results and modifying their pedagogy change over time, and through engagement with the mobile website. Applying design-based research methods to this project will involve:

- Analysis of web server log data to classify and correlate data, and identify trends in academics’ engagement with the website according to their teaching context (e.g., discipline, class size, year level);
- Forensic searches of log data based on academics’ reported intentions and perceived constraints (e.g., course accreditation requirements) that impact website effectiveness;
- Thematic analysis of qualitative data from interviews and focus groups on (a) the perceived ease with which academics can act on resources and recommendations provided by the website; and (b) the changes in academics’ beliefs about teaching and assessment;
- Analysis of survey data about academics’ self-reported benefits of using the mobile website, and changes in their assessment practices and beliefs; compared to their use of other sources of support, such as, informal conversations with colleagues, one-off workshops, and formal programs; and
- Comparison of academics’ SET results on assessment before and after they have used the mobile website.

Ethics approval to conduct this project will be sought from the University of Sydney Human Ethics Committee. The SET database programmer (see Budget Justification) will ensure that all data provided to the project team is de-identified and coded for analysis.
The **deliverables** of this project will provide a foundation for implementing the mobile website solution in other institutions. They are:

1. A mobile website with a step-by-step user guide;
2. Model scenarios based on early career academics’ experience of how they have used the mobile website to enhance their teaching effectiveness in assessment;
3. A project website featuring a description of the research and its outcomes and a link to the mobile website, as well as a blog, hosted by the University of Sydney; and
4. A project report that summarises key findings and adheres to OLT guidelines.

Through the development and evaluation of the mobile website, this seed project creates a foundation for **use, further development and evaluation** of mobile solutions for supporting academics’ professional learning from their SET results.

**Approach**

This project takes a **sustainable and coherent** approach firstly by drawing on selected data from standardised SET or ‘unit of study’ evaluation (USE) surveys at the University of Sydney (Barrie, Ginns & Prosser, 2005). The USE survey is an SET instrument that focuses on students’ learning experience within a unit of study. Early career academics’ results on three single USE survey items will be used. These items focus on constructiveness of feedback; clarity of learning outcomes; and the capacity of assessment to support students’ learning; and were selected because constructive feedback and clear learning outcomes are key indicators of quality assessment (Chalmers, 2007). Survey items similar to USE items are used across the higher education sector. For example, at Macquarie University, the Learner Experience of Unit survey includes several items on assessment for learning. Secondly, this project builds on evidence-based resources on assessment. It will harness existing digital ‘best practice assessment’ case studies\(^2\) that apply the University of Sydney’s student-focused assessment for learning principles. Thirdly, the current approach uses open web technologies to ensure that (a) the mobile website can be easily updated and shared, and (b) its ongoing development and support is cost-effective.

The first **innovative aspect** of this project is to engage early career academics with their SET data on assessment by delivering these results as appealing infographics. Unlike current SET reports that focus on single-semester numerical data, academics will be able to easily interpret their latest results, see visual representations, and identify trends in their data (see Figure 1). The second **innovation** of this project is the provision of personalised best practice resources and case studies; both automatically, by harnessing data on class size, year level and discipline from the SET database system, and interactively, through active control (Coursaris & Sung, 2012). Once academics have logged in they will be able to select the types of assessment tasks that they currently use (e.g., multiple-choice final exam). Then academics will be able to access the approaches recommended for their broad grouping or ‘field’ (e.g., for a large class size in Science, short online quizzes staged across a semester could be recommended). Short (30 second) digital video testimonials from teachers and students involved in best practice case studies will be accessible to encourage early career academics to implement new assessment strategies. Academics will be able to set goals and personalise a digital record their plan, important for “... provide[ing] a sense of purpose and direction in teachers’ improvement efforts” (Penny & Coe, 2004, p. 247).

The third **innovation** of this project is engaging early career academics in connecting and networking with other website users, and peers involved in best practice case studies. Academics will be able to email or ‘click-to-call’ colleagues, to seek advice and/or arrange informal conversations, from which they can learn about teaching (Thomson, 2013) (see Figure 1). Such “peer consultation [around SET results] … facilitates the development of a collaborative learning culture in which there is sharing and openness about teaching” (Penny & Coe, 2004, p. 245). Built-

---

in reminders will be sent to academics’ smartphones two weeks after they have set goals, following the success of this reminder strategy in the original research on face-to-face consultation (Marsh & Roche, 1993).

In the first phase of the project (Feb-Jun 2014) the mobile website will be developed following an iterative, user-centred design process to ensure its usefulness and acceptance to early career academics (see Timeline). The low- and high-fidelity tests will involve ongoing involvement of 5-10 early career academics. This iterative prototype testing with a small number of users will help to eliminate any usability issues (Nielsen, 1993), ensure that the website is addressing the target audience’s needs, and provide opportunities for collecting qualitative feedback.

In the second phase of the project (Jun-Nov 2014) the mobile website will be made available online and 50 early career academics will be invited to participate in a one-semester evaluation of the website based on their previous performance in the three chosen USE survey questions, and in consultation with their Associate Dean Learning and Teaching. Data collected during this stage, including anonymous user log data and interviews will provide answers to the key questions listed above.

In the third phase (Dec 2014-Feb 2015) the data collected in the second stage will be analysed and the outcomes of the project will be disseminated through the project website. The website will be hosted by the University of Sydney and will be available for at least five years. Our dissemination plan includes presentation of the project outcomes at the next Higher Education Research and Development Society of Australasia conference, and publication in the international journal Higher Education Research and Development.

To ensure that the project outcomes and materials take into account different institutional contexts and can be applied in those contexts Professor Judy Kay, Computer Human Adapted Interaction Research Group, Professor Peter Reimann, Centre for Research on Computer Supported Learning and Cognition, and Professor Keith Trigwell, Institute for Teaching and Learning, University of Sydney; and Dr Maree Gosper, Macquarie University, will act as Reference group members in a collegiate capacity. This project will draw on the reference group’s expertise in human-computer interaction design, educational technologies and design-based research. Regular round table meetings with the reference group will ensure that the mobile website will be scalable and transferable to other institutions.

Potential risks lie within the complexity of the proposed mobile website, which will have to be ready for deployment six months into the project. These risks will be addressed through collaborating with the University of Sydney’s SET database programmer, and employing an experienced web designer for the project. To ensure the mobile website is designed and developed within the project timeframe, a substantial amount of the web designer’s time will be expended during the first six months of the project.

Value/Need for Project

Developing and evaluating a mobile website solution to engage academics with their SET results to enhance their teaching is of value to the higher education sector because it satisfies national and institutional priorities. It fulfills the requirement of higher education providers to ensure “that staff ... are advised of student and other feedback on the quality of their teaching and have opportunities to improve their teaching” (TEQSA Act, Higher Education Standards Framework, 2011). The mobile website will inform early career academics of their SET results, and in a cost-effective way, recommend best practice teaching resources and enhancement strategies. This project implements part of the institutional strategic plan (University of Sydney, 2011) by “develop[ing] new tools for identifying teaching and learning strengths to ... support the promulgation of best practice” (p. 17) and by helping early career academics to “implement the assessment principles flowing from the Academic Board review” (p. 17). This project implements and advances a recommendation from a completed ALTC project (Rice, 2011) for enhancing assessment, as the issue “is not necessarily to
generate new ideas about assessment, since there are plenty of those lying around unused, but rather
to connect academics ... with ideas about assessment in a form that ... offers pathways to solutions”
(p. 2). The current project connects early career academics to existing practical ideas about
assessment, and provides personalised resources and strategies to improve their practice. The
website has the potential to be scalable to include other common institutional SET items, and a wide
range of best practice case studies from across the sector.

References

Barab, S., & Squire, K. (2004). Design-based research: Putting a stake in the ground. The Journal of
the Learning Sciences, 13(1) 1-14.
student focused learning perspective on teaching quality assurance. Assessment & Evaluation in
Higher Education, 30(6), 641-656.
Chalmers, D. (2007). A review of Australian and international quality systems and indicators of
learning and teaching. Strawberry Hills, NSW: Carrick Institute for Learning and Teaching in
Chambers, G. N., Threllfall, J. & Roper, T. (2012). Do online web resources help professionals to
work more effectively? A Case study based on three sites. Journal of Education for Teaching,
38(4), 407-418.
Design-Based Research Collective. (2003). Design-based research: An emerging paradigm for
Joughin, G. (2010). The hidden curriculum revisited: A critical review of research into the influence of summative assessment on
intervention to enhance teaching effectiveness. American Educational Research Journal, 30(1),
217-251.
Rice, J. (2011). Good practice report: Assessment of science, technology, engineering and
mathematics (STEM) students. Strawberry Hills, NSW: Australian Learning and Teaching
presented at mLearn, 4th world conference on mobile learning, Cape Town, South Africa.
Tertiary Education Quality and Standards Agency Act, Higher Education Standards Framework
(Threshold Standards) (amended) 2011 (Cth) (Austl.). Retrieved from
thesis.pdf
Attachment I: Project Management

Qualifications, experience and responsibilities of project leader and team members

Project leader: Dr Martin Tomitsch (early career), MSc MSocEcSc PhD GradDipEdStud, is a Lecturer in the Faculty of Architecture, Design and Planning, University of Sydney and Director of the Design Computing program. He has expertise in informatics, human-computer interaction and interaction design, which includes user-centred design methodologies and web application development, and several years of experience in managing research projects, including an ARC Linkage Project (LP110200708). His responsibilities include overall management of the project; supervising the Website Designer (to be appointed); writing the final report; and reporting to the OLT.

Project team members

Dr Jen Scott Curwood (early career), BA BS MS PhD, is a Lecturer in the Faculty of Education and Social Work, University of Sydney. She has expertise in the learning sciences, educational technology and professional development. Her responsibilities include identifying and developing resources and case studies for the mobile website, and analysing qualitative data.

Dr Kate Thomson (early career), BPsych(Hons) MIH PhD GradCertEdStud is an Associate Lecturer in the Institute for Teaching and Learning, University of Sydney. She recently completed her doctoral thesis on academics’ informal conversations on the topic of teaching in a research-intensive university, with a focus on how academics learn about teaching through conversation with their colleagues. She is also one of the academics responsible for the University’s SET system. Her responsibilities include interviewing academics and analysing qualitative data.

Dr Graham Hendry, BA(Hons) PhD GradDipEdStud, is a Senior Lecturer in the Institute for Teaching and Learning, University of Sydney. He has expertise in teaching foundational and award degree academic staff professional development programs. His responsibilities include identifying and developing resources and case studies for the mobile website, and recruiting and interviewing academics, and analysing qualitative data.

Team members are also responsible for participating in meetings, and contributing to writing of the user guide and final report with the Project Leader.
Attachment II: Design Specifications

The basic functionality of the mobile website will include:

- **Personal SET portal:** The mobile website will be ready to use once academics have logged in with their university account details to allow for an easy entry into the application (see Figure 1a). The immediately available functionalities include access to academics’ SET results and general information. The application will allow academics to manage SET data for several units of study through their personal portal.

- **Data input:** Academics will be able to enter contextual and situation-specific data about their units of study, such as the type of assessment used, to receive resources relevant to their units of study and performance goals.

- **Personalised resources:** Based on a computational analysis of the SET results and data input, academics will be presented with appropriate resources and links for further information. These resources will be presented in a variety of formats, including infographics, short textual advice, case studies, and videos featuring academics and students.

- **Connecting academics:** The mobile website will allow academics to connect with colleagues to seek further advice using forums, update feeds, and email (see Figure 1b). Users of the mobile website will be able to choose in their own settings whether they wish to be available for this form of online consultation. Existing enterprise network systems used by academics (such as Yammer) will be investigated for possible inclusion in this part.

- **Administration interface:** A customised content management interface will be developed to allow for simple upload of resource material and maintenance of links between resources as well as the metadata for resources. This metadata serves as filters for creating recommendations for specific SET results and contexts.

**Sustainability of the development** will be achieved using open web technologies (HTML5 and CSS3) as this represents an economic and supportable approach. This approach will make it possible for the application to be made available across a wide range of devices (smartphones and tablets) and platforms (including iOS devices and Android devices).

**Scalability of the development** will be achieved by using scalable web frameworks and developing the mobile website in a modular approach. The website will be developed so that it can be readily modified to work with other institutions’ SET systems. The ‘connecting academics’ part of the website can be adapted to integrate enterprise networks already in use at each institution – to take advantage of existing infrastructures and use practices.

**Technical expertise available to the project team** includes the expertise of the project leader, Dr Martin Tomitsch, who has a background in informatics, human-computer interaction and interaction design (involving user-centred design methodologies and web application development). His experience in developing and evaluating software interfaces is essential to the successful implementation of the project. He will be supported by a Website Designer (to be appointed; likely from Dr Tomitsch’s group of research students), who will be responsible for implementing the design and technical aspects of the mobile website.

**Availability of required technology and infrastructure:** The project leader has access to a range of tablet and smartphone devices, which the team will use for testing the mobile website. The University of Sydney’s Institute for Teaching and Learning will provide the required server infrastructure to host the website.
## Attachment III: Timeline

<table>
<thead>
<tr>
<th>Design-based cycles/tart date</th>
<th>Key activity</th>
<th>Dissemination strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Preparation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>February 2014</td>
<td>Adapt resources and case studies on assessment; produce 30-second videos</td>
<td>Individual meetings; project team and reference group members round table 1</td>
</tr>
<tr>
<td><strong>Enactment and Analysis</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>March 2014</td>
<td>Develop and test low-fidelity mock-ups and wireframes (using 2013 SET data) with 5-10 academics</td>
<td>Volunteer user interviews and focus groups</td>
</tr>
<tr>
<td>April 2014</td>
<td>Based on the previous implementation phase, iterate, develop and test a high-fidelity web-based prototype (using 2013 SET data) with 5-10 academics; investigate users’ beliefs about instruction and assessment</td>
<td>Volunteer user interviews and focus groups; project team and reference group members round table 2</td>
</tr>
<tr>
<td>May 2014</td>
<td>Based on the previous implementation phase, iterate and develop a fully functional web application targeted for smartphone and tablet computer usage; recruit 30-50 volunteers for Evaluation Phase I</td>
<td>Mobile website available for use by volunteers</td>
</tr>
<tr>
<td><strong>Analysis</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>June 2014</td>
<td>Volunteers use web application with 2013 SET data</td>
<td>Email all early career academics in consultation with their Associate Dean Learning and Teaching; website notification and flyer included with paper-based SET surveys; mobile website available</td>
</tr>
<tr>
<td>July 2014</td>
<td>All early career academics notified of their semester one 2014 SET results; volunteers use web application</td>
<td>Volunteer user log data; volunteer user interviews and scenarios</td>
</tr>
<tr>
<td><strong>Redesign</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>July/August 2014</td>
<td>Iterate and redesign the web application based on the results from Evaluation Phase I; explore how users’ beliefs about assessment changed through engagement with the web application</td>
<td>Revised mobile website available to volunteers; user guide; project specifications</td>
</tr>
<tr>
<td>December 2014-February 2015</td>
<td>Final analysis of data and summary of results</td>
<td>SET results for semester two for all users; School/Faculty/University teaching and learning forums; mobile website; HERDSA conference submission; journal article</td>
</tr>
</tbody>
</table>