

## What goes on, comes around: Exploring the affordances of engineering laboratory venues and how to interpret these for proposed face-to-face and online venues.

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### OVERVIEW OF WORKSHOP

Experimental learning, traditionally conducted in on-campus laboratory venues, is the cornerstone of science and engineering education. This workshop is designed to disseminate the results of an Australian Government Office for Learning and Teaching (OLT) funded study to evaluate a technique for the investigation of teaching and learning experiences within current face-to-face and remote experimental learning environments. The collected data of real-time interactions in laboratory venues have been used to establish, and verify, a research tool developed for investigating the pedagogical affordances of such venues, hence enabling the benchmarking of student experiences in existing and proposed cyber environments.

### ACTIVITIES

- Highlighting audio/video technologies for the investigation of experimental learning pedagogies.
- Overviewing the outcomes of the study.
- Recommendations for the application of video data of student activities in face-to-face and online experimental learning.

### TARGET AUDIENCE

Engineering educators involved with student experimental work. No prior knowledge is assumed to participate in the activities.

### OUTCOMES

Participants will gain some understanding of the relationship between “what happens in the laboratory” (*kikan-shido* and *OTST/L*) and “the student’s learning outcomes of laboratory work” (reflected in their audible and written *engineering talk*) as reflected by the affordances of venues.

### REFERENCES (OPTIONAL)

- Banky, G. P. (2007). Looking for Kikan-Shido: Are elements of it detectable in tertiary engineering pedagogy? Paper presented at the Australasian Association for Engineering Education 2007 Conference, Melbourne, Australia.
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- Nickerson, J. V., Corter, J. E., Esche, S. K., & Chassapis, C. (2007). A model for evaluating the effectiveness of remote engineering laboratories and simulations in education. *Computers and Education*, 49, 708-725.
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### KEYWORDS

Experimental learning; remote laboratories; kikan-shido; over-the-shoulder-teaching/learning.

### PRESENTERS' BACKGROUNDS

*Dr George Banky:* George is a Senior Lecturer and Subject Convenor who has completed a PhD at the University of Melbourne's Centre for the Study of Higher Education (CSHE). He has been nominated for both Carrick and AAEE Citation Awards for Outstanding Contribution to Student Learning. He is a founding member of the Faculty of Science, Engineering and Technology's STEMEd Group; and the "Engineering and Technology Education Leaders Forum" of the AAEE. He is the Project Leader for an OLT funded research project team whose members are the other three listed workshop presenters.

*Aaron Blicblau:* Aaron is a Senior Lecturer and Subject Convenor of a first year subject involving experimental learning and is the final year project coordinator for the mechanical engineering stream. He is also a founding

member of the STEMed Group. In 2007, he was the recipient of an individual Carrick Citation Award for Outstanding Contribution to Student Learning. In 2009 he was presented with the Vice-Chancellor's Intersectoral Collaboration Teaching Award. He is a team member of an OLT funded research project with the other three listed workshop presenters.

*Dr Prasanna Egodawatta:* Prasanna is a Senior Lecturer with teaching duties across all academic years in both undergraduate and coursework Masters Degree programs. Some of his students conduct remote laboratory exercises on equipment sited at Curtin University. He is a team member of an OLT funded research project with the other three listed workshop presenters.

*A/Prof Hari Vuthaluru:* Hari is a recipient of a past ALTC grant (for a project titled: "Double degrees: research pathways, enabling cross-disciplinarity and enhancing international competitiveness" with five partner universities). He has published on remote labs and the delivery of several chemical engineering units in distance mode. His experience as an undergraduate coordinator and program advisor, will greatly contribute to achieving the stipulated project objectives. Some of his students conduct face-to-face laboratory activities on equipment used remotely by the Queensland University of Technology cohort. He is a team member of an OLT funded research project with the other three listed workshop presenters.

The views expressed in this activity do not necessarily reflect the views of the Australian Government Office for Learning and Teaching.
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