I do and I understand: practiced pedagogy during experimental learning by engineering students.

Dr George P. Banky*, Aaron S. Blicblau*, A/Prof Hari Vuthalurub, and Dr Prasanna Egodawattac.

Engineering & Science Education Research (ESER) Group, Swinburne University of Technology*, Curtin University*, Queensland University of Technology*

Corresponding Author Email: gbanky@swin.edu.au

OVERVIEW OF WORKSHOP

Experimental learning, traditionally conducted in on-campus laboratory venues, is the cornerstone of science and engineering education. This workshop is soliciting participant input in order to innovatively apply established techniques for the investigation of teaching and learning experiences within current face-to-face and remote experimental learning environments. The subsequently collected data of real-time interactions in laboratory venues will be 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. Support for this activity has been provided by the Australian Government Office for Learning and Teaching (OLT).

ACTIVITIES

• Highlighting individual experiences with the implementation of experimental learning.
• Overviewing the implementation of audio/video technologies for the investigation of experimental learning pedagogies.
• Identifying the occurrences of kikan-shido and over-the-shoulder-teaching/learning (OTST/L) during laboratory experimentation.
• Applying engineering talk as an indicator for student understanding.

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 engineering talk).

REFERENCES (OPTIONAL)


KEYWORDS

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

PRESENTERS’ BACKGROUNDS

Dr George Banky: George is a 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 Engineering and Industrial Sciences’ ESER Group; and the “Engineering and Technology Education Leaders Forum” of the AAEE. In 2009 he participated in the inaugural meeting of the ”US-Australia Workshop
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 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 workshop presenters.

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