



## WORKSHOP

# Simulation across the disciplines – exploring simulation as a learning mode

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### WORKSHOP MODE

Hybrid mode during Perth business hours

### OVERVIEW OF WORKSHOP

This workshop uses simulations to explore aspects of the Engineering Futures 2035 report, specifically: *Will professional engineers be required to work more at .. problem definition in multi-disciplinary teams with more representatives of communities we serve, requiring greater and deeper communication skills? (Crossthwaite, 2019 p1) including ... enabling skills such as complex problem solving and critical thinking ... identified as critical by employers (Ibid p14).*

Simulation and modelling are familiar engineering tools, and this workshop extends that awareness by using simulations designed to aid learning about *complex problem solving* and *environmental awareness*. The workshop demonstrates how familiar basic modelling and simulation principles apply equally to non-technical topics, while exploring additional skills and knowledge which educators need to be proficient with non-technical simulations. It introduces ways in which simulation can be used to achieve learning objectives and assessment tasks across the engineering syllabus.

### ACTIVITIES

The workshop employs three different simulations to explore possible futures of engineering education and help participants learn about employing similar activities in their own contexts for teaching about such things as problem finding, complexity, and working in teams.

1. The first simulation introduces problem finding and working with complexity. Debriefing includes discussion of educator skills and knowledge required for using similar activities.
2. The second activity focuses on key points of the Engineering Futures 2035 report to identify implications of the future engineer profile set out in the diagram on P63.
3. The final activity provides participants with means of continuing to develop their capabilities for using simulation for new learning experiences as they prepare the engineers of the future.

### TARGET AUDIENCE

No prior knowledge is needed to participate. The workshop will be of value to those looking to extend their capabilities for using interactive approaches to teaching and assessment.

### OUTCOMES

Participants will enhance their awareness of simulation as an educational tool, and learn to expand their own capabilities for developing novel techniques for preparing the engineers of the future.

### REFERENCES

Crossthwaite, C. (2019). *Engineering Futures 2035*. Retrieved from <https://tinyurl.com/tkzv4k> 3/8/2021

### KEYWORDS

Educational simulation; engineers of the future; working with complexity; problem definition

### PRESENTERS' BACKGROUNDS

Dr Leigh is a simulation professional with more than 30 years' experience as an academic educator and researcher.

Jan Roche is a doctoral candidate and simulation specialist on the academic staff at Australian Catholic University in Sydney.