Session 7
Learning Designs to Accelerate and Deepen Learning: The Use of 3-D Immersive Visualisation
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> *Kylie Readman is the Director of the Centre for Support and Advancement of Learning and Teaching at the University of the Sunshine Coast. Kylie is the co-leader of a recently awarded commissioned grant from the Office of Learning and Teaching (OLT) to investigate the student experience in regional universities. She has recently finalised an OLT extension grant, 'Professional Conversations for Academic Leadership' and is the USC lead for the OLT project, 'Advancing academic professionalisation: National Benchmarking of Graduate Certificates for Higher Education'. In 2013, Kylie became the Project Manager for USC's Visualisation and Blended Learning Project. The group was tasked, as part of the establishment of the EIF funded Engineering Learning Hub (ELH), to establish an iconic, state-of-the-art facility that provides for 3D immersive visualisation and collaboration to redefine learning and teaching.*

The University of the Sunshine Coast (USC) as part of the EIF funded Engineering Learning Hub (ELH) Project, has established an iconic, state-of-the-art suite of facilities that provides for 3D immersive visualisation and collaboration to enhance learning and teaching. A key driver for this project was to extend our capacity to offer our regional students world class, technology-rich and engaging learning experiences that accelerated and deepened their learning.

The initial brief to the Visualisation and Blended Learning (VBL) Project Team was to investigate and specify the best system solution for immersive and interactive visualisation. These facilities would provide opportunities for engaging student learning within the physical spaces identified as part of the architectural drawings for the building.

USC offers both Civil and Mechanical Engineering in programs accredited by Engineers Australia. There are threshold concepts (Meyer and Land, 2013) that are critical to understanding different facets of the Engineering curriculum. An example of such a threshold concept for students is their ability to conceptualise what 3D objects might look like when they are represented in 2D drawings and vice versa. As Engineering contains many concepts such as this that require highly developed spatial awareness and visual literacy, there are many opportunities for integrating pedagogies of immersive observation into the existing curriculum.

The curriculum challenges of this task were particularly acute in that the VBL team had to establish a unique learning design, pedagogical framework and curriculum approach that would be able to be applied by the Engineering academic staff as part of their course work requirements. This included the significant task of developing original, curriculum-relevant content for use in the immersive visualisation facilities: 3-D, 2-D and touch enabled content that utilised a variety of software packages that the newly established development team had little experience in using at that time.

This presentation explains the processes that were undertaken to meet these challenges:
- The processes and frameworks utilised to establish business, user and functional specifications for the software solutions.
- The partnerships that were established between staff and students in the School of Science and Engineering, the Learning and Teaching Unit, Information Technology Services, Facilities Management, other universities, consultants and contractors to realise the vision.

- The research undertaken with students to understand their engagement and learning preferences.
- The establishment of an appropriate staffing complement to support content development, curriculum mapping and project scoping using an agile design process.
- The development and application of pedagogies for visual engagement and immersive observation.
- Professional learning and training requirements for staff to use the facilities once they were established.

The learning design orientation that was applied to all of these processes and the ability of the team to stay focused on the requirements for highly engaging student learning experiences was one amongst many lessons learnt through the establishment of the visualisation facilities at USC. It is the analysis and further exploration of this orientation that is the focus of this presentation.