

5. CONCLUSIONS

Graduating good quality mining engineers requires world-class education.

Simulations, VR and digital gaming technologies have already demonstrated their educational value to other industries, confirming the powerful learning opportunities and advantages. It can be said that using simulations enhance student learning. Increasingly, integrated simulations are being brought into professional education [21]. It has been observed that it is highly beneficial for students to obtain a holistic experience in the mining engineering learning process.

The innovative education technologies is one of the research strengths of UNSW's School of Mining Engineering and the School has developed various VR modules for improvement of learning and teaching across the major Mining Schools in Australia. Till today, 18 modules have been developed for both the mining industry and the learning and teaching have proved highly successful. All of them will be beneficial for both national and international students at all levels including mining professionals. Plans are currently underway to develop more modules along with the enhancement of the current modules.

The online availability of some of these learning and teaching modules are particularly relevant for the postgraduate distance programs where many of the students/professionals work at remote sites. The ViMINE approach provides learning activities for developing and formally assessing systems thinking in mining engineering. It therefore provides proof-of-concept to support the educational case for funding a more comprehensive development in association with software and mining industry collaborators.

By improving the ability of mining engineers to take into account the longterm and environmental consequences of their financial and technical decisions, there will be economic, environmental and safety benefits to the industry and surrounding communities. The research group is currently developing this system to be used to make decision easier in the stages of mine planning especially, in feasibility study stages. The integrated simulation approach will be demonstrating how this type of visualization techniques can benefit systems thinking by improving the ability of people working in the mining industry to take into account the long-term and environmental consequences of their financial and technical decisions.

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