

## Chapter 5

# Mining Education Australia: Adapting Technology to Support a Collaborative Approach to Transnational Teaching for Mining Professionals

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### ABSTRACT

*Due to a range of social and economic factors, Australian institutions have struggled to meet the demand for highly trained professionals for the minerals industry in recent years. In order to address this issue, Mining Education Australia, a consortia of four of Australia's mining schools was established to develop and deliver a common curriculum for mining engineering education.. The use of technology to support the delivery of this common curriculum is integral to the success of this initiative. This chapter outlines the challenges in such collaborations and discusses the range of corporate and open source technologies selected and adopted to overcome these challenges to enable collaborative teaching and learning activities in this trans-national program.*

### INTRODUCTION

Mining Education Australia (MEA) was established to address the need to develop a sustainable approach to the provision of a higher education program for minerals industry professionals through the development and delivery of a national curriculum. This

chapter outlines the development of MEA and in particular will focus on:

- An outline of the social and economic issues facing minerals education in Australia.
- A discussion of the approach to curriculum design adopted by MEA to support the development of a national curriculum, including the theoretical considerations.

DOI: 10.4018/978-1-61520-909-5.ch005

- An outline of the issues involved in establishing a common teaching and learning program across four institutions and the ways in which adapting technologies have helped to address these issues.
- A description of the blended approach to teaching and learning implemented to support the large face-to-face cohorts in partner institutions in some subject areas and to address shortfalls in academic expertise in partner institutions in particular specialist areas.
- A discussion of the technologies adapted to support cross institutional teaching and learning activities including Moodle, interactive teaching and learning rooms, lecture recording and videoconferencing.
- A discussion of the implementation of an online peer review system to support high quality project based activities across the partner institutions.
- An explanation of the development of an online database to provide a common and accessible repository for all MEA materials, processes and policies.
- An outline of future developments including the adoption of an e-portfolio approach for MEA.

## **BACKGROUND**

Australia is one of the world's leading mining countries (Australia Bureau of Statistics, 2008) with the minerals industry contributing significantly to Australia's prosperity. In 2005-2006 the mining industry contributed 7% to Australia's gross domestic product (Australia Bureau of Statistics 2008). The industry is Australia's second largest exporter, accounting for 37% of total exports in 2006-2007 (Australia Bureau of Statistics, 2008). The mining industry also contributed 17% to total national expenditure on research and development (R&D) in 2006 – 2007 (Australia Bureau of

Statistics, 2008). However, despite its significant contribution to Australia's wealth, the cycle of 'boom and bust' that affects the minerals industry has a significant impact on the capacity of universities to maintain educational programs for mining professionals. In times of downturn, institutions struggle to attract sufficient student numbers to minerals education programs to remain viable. Conversely, during peak boom periods, institutions can be swamped with enrolments in these programs but struggle to attract high quality PhD students. As financial rewards are considerably higher in the minerals industry than in education professions, few are attracted to the academic world, resulting in challenges in providing sufficient academic staff to support these programs. Additionally, the educational environment is one where many higher education institutions and programs in Australia are struggling to maintain their economic viability. Consequently, many courses and programs are being closed down as institutions implement minimum student enrolment figures as indicators of feasibility.

In the mid to late nineties, during a period of downturn in the minerals industries and lacking sufficient enrolments to meet institutional requirements for financial viability, organizations in Australia and internationally closed many mining education programs. This resulted in a serious worldwide shortage in the number of highly qualified people for the minerals professions (The University of New South Wales, 2006). In order for the Australian minerals industry to maintain its contribution to economic and social outcomes for the country, it is considered essential that the higher education system is able to provide and support the kind of high quality education required to provide professional staff capable of enabling the industry to continue to compete in a global environment and to "maintain its social license to operate" (The University of New South Wales, 2006).

Much of Australia's mining industry is located in rural and remote areas of Australia. In addition to the considerable contributions to GDP, export

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