Chapter 9
Integrating Work and Learning in a Postgraduate Maintenance Management Program

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ABSTRACT

Central Queensland (CQ) University conducts a suite of postgraduate programs in maintenance management. There is an emphasis upon Work Integrated Learning, and the programs are delivered in a flexible mode by academics and lecturer-practitioners so that learners are provided with an authentic learning experience. The learners are mature aged, experienced practitioners who are either graduate engineers or trades qualified, working in the maintenance management area of their organisation. Study materials have been designed and developed through the collaboration and consultation with industry, university, and practitioner stakeholders to ensure the student's learning and the assessment of that learning is incorporated into the tasks and responsibilities of learners in their workplace. A blended learning delivery model includes the opportunity for students to attend a two day residential school. Ongoing improvement of the academic program, consultancy, and research opportunities arises from engagement with stakeholders through a number of mechanisms including a conference to showcase innovative practices of physical asset and maintenance management.

INTRODUCTION

Globally universities are under pressure to change as their traditional client base has drastically altered and this is a consequence of the influences of massification (Winckler, 2009; Guri-Rosenblit, Sebkova & Teichler, 2007; Alexander, 2000) and post-massification (Teicher, 2003; Reiko, 2001; Gumport, Nozzi, Hamah, & Zemsky, 1997) of higher education. The student demography now includes students who in the past would not usually have attended university. This includes

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more mature students, not only seeking technical knowledge, but coupled with their life and professional experiences seek a learning environment with an emphasis upon life-long learning. In order to be nationally and internationally competitive universities have become more concerned with knowledge production, innovation and relevance of their activities to the 'real world' environment.

Kerr (1995) describes the modern university as a 'multiversity' which comprises a complex, conglomerate of many communities engaging for related purposes. Coupled with the process of massification, an explosion of knowledge and the ability of the public to access it more readily through technology have led to the increasing sophistication of the public. Consequently, universities are no longer viewed as bastions of rarefied knowledge, only accessible to a privileged few. Further Treby and Shah (2005, p.16) contend 'skills development is enhanced by the inclusion of teaching staff with industry experience, the addition of visiting speakers, other good contact and input from relevant professionals and the opportunity to undertake work-based learning'. Indeed, Wright (1990, as cited in Bradney, 1992) emphasise 'the view that industry and higher education should work more closely together has come to be an all-but-unshakeable part of the dominant, conventional wisdom'. CQUniversity (CQU) recognised these aspects as a significant opportunity to challenge the traditional university model and to 'remake' such a model through collaboration, exploration and engagement with the 'real world' environment of industry and their educational needs. From their inception the suite of postgraduate Maintenance Management Programs have operated as a nexus between CQUniversity and industry. This nexus is established as a result of demonstrated respect, recognition of experience and the sharing of knowledge from differing perspectives between its members. The resulting learning environment represents well the foundations of Mode 2 knowledge development whereby aspects such as contextual learning, trans-disciplinary approaches and multiplicities of perspective are central and supported (Fook, Ryan & Hawkins, 2000, p213). Mode 2 is typified as the interactive production of knowledge within the context of application, while Mode 1 knowledge production coincides with the traditional '*ivory tower*' image of university knowledge production. Table 1 highlights the comparative differences between Mode 1 and 2 knowledge production.

This chapter focuses upon the CQUniversity-industry nexus and the interaction between the disciplines of education and engineering practice. Taking into consideration the relationship between working and learning and the importance of workplaces as sites of learning and knowledge production (Symes & McIntyre, 2000; Boud & Solomon, 2001) and employees as worker/learners (Chappell et al., 2003; Tennant, 2000; Usher & Solomon, 1999). The suite of postgraduate programs comprises the Graduate Certificate, Graduate Diploma and the Masters by coursework. The focus is upon authentic learning (Gulikers, Bastiaens & Kirschner, 2004; Birenbaum, 2003; Gielen, Dochy & Dierick, 2003; Dochy, 2001;

Table 1. Attributes of Mode 1 and Mode 2 knowledge production (Source: Hessels & Van Lente 2008)

Mode 1	**Mode 2**
Academic context	Context of application
Disciplinary	Trans-disciplinary
Homogeneity	Heterogeneity
Autonomy	Reflexivity/social accountability
Traditional quality control (peer review)	Novel quality control