Chapter 7
Online Construction Management Education: A Discipline-Wide Implementation

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ABSTRACT
Construction management is a relatively new discipline, straddling civil engineering and architecture. Graduates are in high demand and the discipline attracts students from a wide range of backgrounds, including those from school, industry employees seeking to progress their careers as well as those wishing for a career change. Online education is attractive to these students as it provides them with the flexibility to marry their studies with their other responsibilities. However, their diverse backgrounds present challenges to those teaching them as many are unfamiliar with online education and some have not studied for extended periods. They need to be introduced into the university environment in general and the particular approach of the discipline in particular. At the University of Newcastle, the Bachelor of Construction Management is taught based on problem-based learning principles.

INTRODUCTION
This chapter describes and discusses the initiatives that have shaped the Bachelor of Construction Management (BCM) offered by the School of Architecture and Built Environment at the University of Newcastle (UoN) in Australia. It focuses on the ways the program has evolved in response to changes in computer technology, as well as the changing profile and expectations of the large numbers of students attracted to it. The BCM is offered to on-campus students as well as distance learners. In line with trends

DOI: 10.4018/978-1-5225-0968-4.ch007
in many countries, increasing numbers of on-campus students prefer to engage virtually rather than attend face-to-face lectures. This inexorable trend highlights the need for academics to teach in ways that overcome the impersonal nature of large classes and the isolation of distance learning.

This chapter differs somewhat in form and content to many of the other chapters in this book as it provides cameos of a range of initiatives, undertaken to assist students make their own way through an online course of study, assisting them in the difficulties of new learning styles, expectations and then assisting them in personalizing how they represent their learning to the professional world. The purpose behind bringing the concepts or projects covered here into one place is to show how to engage students in online learning, thereby allowing them to individualize their courses and programs. The aim is also to show how to create a learning environment which is welcoming and responsive, while at the same time providing effective guidance in what can be a lonely place for students studying predominantly online and for most the first time.

The chapter examines how school students who are considering university as an option after school are able to select a subject which suits their needs, and then engage in it online as part of their secondary curriculum and gaining credit at university for their later studies, in reality constructing their own pathway to university. This is followed by presentation of the induction model, the students’ first foray into online study at university, which allows them to engage in their studies, most likely for the first time, and describes the ways in which the module extends through their university career, providing insights and support. For example, one of the most concerning aspects of university study is academic integrity, and so students, through the module outlined here, are able to engage in learning about the processes and rules associated with academic writing; the module is individualized for the student with questions drawn from a database to suit the students’ progress and needs in specific areas of academic writing and behavior.

The above initiatives are activated before the student even starts their university studies, assisting in creating an environment which develops students’ confidence to confront the learning ahead. This support is continued with the Guidance Mentor program which treats the students as individuals, through monitoring their progress and providing targeted support in a non-threatening manner, directing them to where they can access support, for all those issues that arise in life. Finally the e-portfolio allows the student to both monitor their progress, engage with graduate and professional attributes in a meaningful way, and develop their own portfolio as evidence of how they have achieved the attributes. Students are able to personalize the way they demonstrate their level of achievement at any point, and to draw from experiences outside the formal university environment to demonstrate advancement in their profile of knowledge, skills and attitudes.

The initiatives documented in this chapter are comprehensive and sequential, so developed to ensure a quality outcome for students. Often one or two initiatives are introduced in the literature, but when the initiatives presented here are taken as a whole, they represent a significant innovation in achieving the purpose of providing online and blended learning students with an experience of quality learning. The program of study represented in the mentioned BCM degree was ranked continually at 3 or above in student and graduate evaluations nationally with the lecturers managing and teaching into this program winning multiple awards for innovation. The chapter provides an overview of a multiple systems approach to teaching innovation over a period of years, in the context of that degree course.