

Preface

Changing student profiles and the increasing availability of mainstream and specialised learning technologies are stretching the traditional models of teaching and learning in higher education. Web-based lecture technologies, for example, are often associated with reduced lecture attendance, bringing their dominant position within university culture into question; online collaborative and conferencing tools enable students to communicate and collaborate from diverse locations freeing up their need to come to campus; and the increasing use of mobile devices is changing the design of teaching and learning spaces.

Research provides strong evidence of the potential of technologies to facilitate cognition and learning. We also know that technologies do not work in isolation of the broader curriculum and where technologies have been bolted on, rather than integrated in a holistic way, students are in danger of an inferior learning experience. Hence, their use needs to be designed with awareness of not only their potential for facilitating learning, but with an understanding of their potential impact on the whole learning environment.

This edited volume gives insights into how teaching and learning can be done differently. It features current research exploring new theoretical models relevant to the changing circumstances, examples of practice which capitalise on the potential of technologies to deliver alternatives to the more traditional lecture-based model of university teaching, and an examination of the challenges facing institutions in transforming innovation into sustainable practice. We organised the chapters included in this edited volume into four major parts: (1) theoretical consideration for the twenty-first century curriculum, (2) case studies: moving beyond traditional practice, (3) technological and pedagogical innovations influencing curriculum renewal, and (4) sustainable practice in technology-rich environments.

The first chapter explores the imperatives of changing student profiles, the pervasive influence of technologies and the pressure to produce work-ready graduates with more than discipline knowledge as consistent themes giving rise to new curriculum models in the twenty-first century (Maree Gosper & Dirk Ifenthaler, Chap. 1). In Part I, chapters address theoretical foundations for the development of curricula. Chapter 2 explores many of the pedagogical options available to higher education

instructors that ensure multimodal resources and constructions are included in new forms of pedagogy. It is argued that students are now able to explore new ways of accessing and connecting content to multimodal forms of representation in order to break away from text, time, and place (John G. Hedberg & Michael Stevenson, Chap. 2). The next chapter examines how curriculum design needs to be influenced by the effective development of virtual collaborative learning environments. It is suggested to devise more adaptive, educationally focused teaching and learning strategies which reflect the current realities of social Internet use (Stephen Quinton & Matthew Allen, Chap. 3). Next, the Maori concept of Ako is used to explore the reality of an open curriculum and to suggest a model for open education that is defined less by technology and more by the structured social experience of education (Stephen J Marshall, Chap. 4).

In Part II, chapters focus on case studies which move beyond traditional practice of teaching and learning. In the first chapter of this part, authors present a theoretical insight into research-based learning and teaching which integrates learning, teaching, and research. The case study describes a curriculum for descriptive and inferential statistics using the research-based learning and teaching approach and provides reflections on further implementation of research-based learning and teaching, including the adoption of new technologies to assist this important approach of university education (Dirk Ifenthaler & Maree Gosper, Chap. 5). The next chapter introduces an approach to address the changing needs of engineering education. Shifts from instructors to orchestrators of learning, from passive students to active students, from lower cognitive levels to higher levels, and to creative learning communities are illustrated (Farrokh Mistree, Jitesh H Panchal, Dirk Schaefer, Janet K. Allen, Sammy Haroon, & Zahed Siddique, Chap. 6). Chapter 7 provides insights on how to create and sustain an enterprise-based curriculum as an alternative curricular model to educate instructional designers (Ana-Paula Correia, Chap. 7). Next, the interteaching approach is introduced which shifts the focus from lectures to tutorials. The case study describes the implementation of interteaching in a second-year psychology course, exploring the impact for both students and staff (Mandy Kienhuis & Andrea Chester, Chap. 8). The case study reported in Chapter 9 reports a blended learning approach using situated learning to redesign the curriculum of cell, plant, and microbiology courses in a first-year science programme. Findings indicate efficiencies and heightened motivation for both staff and students (Danilla Grando & David Santandreu Calonge, Chap. 9). In the final chapter of this part, the case of Chiropractic instructors who changed the curriculum for their second-year undergraduate students by integrating case-based learning in a multimedia format is reported. The media annotation tool positioned the case videos into an active environment requiring small group and scaffolding activities to stimulate clinical thinking (Meg Colasante, Amanda Kimpton, & Jennifer Hallam, Chap. 10).

In Part III, chapters address technological and pedagogical innovations influencing curriculum renewal. In first chapter of this part, three common ways in which students are helped to make connections between their university learning and their more practically oriented learning are discussed: work integrated learning, inquiry-based learning designs and simulations. Then, rich media technologies are addressed

which can link university classrooms with sites of professional practice (Barney Dalgarno, Gregor Kennedy, & Alan Merritt, Chap. 11). The next chapter presents a combination of technological and pedagogical advances. This techno-pedagogy is fostering a transition from the traditional learning management system model to a more integrated social learning network (Benjamin E. Erlandson, Chap. 12). Chapter 13 investigates the characteristics of effective podcasting in an educational psychology class. It is argued that when podcasts are used as primary method of instruction, there is a need to address students' perceptions of lecturer intent (Penny Van Bergen, Chap. 13). Next, an overview of research issues related to digital game-based learning with an emphasis on its application in formal education settings is provided (Hercules Panoutsopoulos, Demetrios G. Sampson, & Tassos Mikropoulos, Chap. 14). Chapter 15 explores changing conceptions of learning brought about by technological changes and opportunities, and examines more closely potentials of video games for education (Dana Ruggiero, Chap. 15). Next, theoretical instructional design foundations are discussed that are helping revolutionise simulation in the fields of aviation and healthcare (Jill E. Stefaniak, Chap. 16). The potential of virtual worlds for higher education is addressed in the next chapter. The range of challenges associated with implementing these environments into curricula is critically reflected (Helen Farley, Chap. 17). The final chapter of this part reports on the results of a pilot of an e-portfolio tool involving different curriculum contexts across two semesters. The need for e-portfolios to be embedded into appropriately designed tasks is made evident through a mixed methods approach (Margot A McNeill, Amanda, Parker, Andrew Cram, Chap. 18).

In Part IV, chapters present sustainable practice in technology-rich environments. The first chapter of this part investigates art students' experiences of inquiry using technologies. The study emphasises that effective curriculum design requires an "a priori" understanding of quality experiences of technology-mediated learning (Robert A. Ellis, Chap. 19). The next chapter discovers common challenges faced by innovators and explores ways that universities could become more active contributors to sustainable curriculum change (Cathy Gunn, Chap. 20). Chapter 21 identifies challenges of an academic leader working to improve and sustain quality learning and teaching in an information-rich environment (Judyth M. Sachs, Chap. 21). The final chapter presents an adaptive model that embeds learning technologies into pedagogical design at an early phase of curriculum renewal and development. It demonstrates the processes and resources needed for a learning design approach that integrates technologies into curricula for sustainable practices (Judith P. Lyons, John Hannon, & Claire Macken, Chap. 22).

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