



## **Chapter 21**

# **Towards Establishing the Best Ways to Teach and Learn about IT**

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*In this chapter we report on an ongoing project to improve the ways we teach about IT in an undergraduate degree. Using a relational perspective on learning, we have developed a framework of factors to encourage students to adopt a deep approach to learning about IT. We describe the design, implementation, evaluation and refinement of learning contexts and learning activities based on the framework. Results are encouraging and show a significant positive effect when compared with a previous study by other researchers involving a different teaching and learning context.*

### **INTRODUCTION**

A challenge for IT education in the 21<sup>st</sup> century is to find ways to produce graduates who meet IT employers' expectations. Recent research indicates that employers are not satisfied with the understanding and skills of new IT graduates, claiming that curricula are unrealistic and unsuited to business needs (Hawforth & Van Wetering, 1994; Misic & Russo, 1996; Roth & Ducloss, 1995; Trauth, Farwell & Lee, 1993).

So what is wrong with current IT undergraduate curricula? Is there a problem with the content, as suggested by IT employers? Our review of the IT higher education research literature identified a strong focus on curricular content. Widely

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available model curricula for IT courses have existed for many years and have been regularly updated and published in the literature (for example Cohen, 2000; Couger et al., 1995; Davis et al., 1997; Longenecker et al., 1995; Mulder & van Weert, 2000). The design of these model curricula incorporates direct input from industry and the research literature on the skills and knowledge requirements of IT professionals (Athey & Wickham, 1995; Doke & Williams, 1999; Lee et al., 1995; Richards & Pelley, 1994; Richards et al., 1998). It is unlikely that the problem lies with the content of IT curricula.

Could the problem lie in ‘how’ we teach our curricula and, consequently, ‘how’ our students learn about IT? Are we teaching about IT in the best ways possible? If our strategies for teaching about IT are inappropriate, then it is unlikely that students will be gaining the understanding and skills required by employers. In reviewing the literature on IT teaching, we found reports on implementations of a number of new strategies for teaching about IT. However, these strategies were not, in general, underpinned by any contemporary, research-based view on teaching and learning and have not been evaluated in any structured way. Therefore, the problem of employers’ concerns with the skills and understanding of our graduates could lie in ‘how’ we teach about IT.

In this chapter we report our contribution to overcoming employers’ dissatisfaction with IT graduates. We have begun the long process of establishing the best ways to teach and learn about IT. A number of steps have been taken:

1. We have sought a contemporary, research-based view on student learning which would adequately underpin teaching and learning about IT in the 21st century and should produce graduates with the qualities required by IT employers. We have chosen a relational perspective on student learning (Biggs, 1999; Marton & Booth, 1997; Prosser & Trigwell, 1999; Ramsden, 1987, 1988). From this perspective the best ways to learn about a discipline are to use the deep learning approaches known to lead to high quality learning outcomes. The best ways to teach are to identify and implement in the learning contexts and learning activities the discipline-specific factors likely to encourage students to use deep learning approaches. We describe in detail and justify a relational perspective later in the chapter.
2. We have reviewed the IT education research literature for insights into the best ways to teach and learn about IT. Our review sought to identify the IT-specific learning context factors and learning activities likely to encourage deep learning approaches. In general we found little attention to the area within the IT education literature.
3. The next step was an iterative one. Based on a relational perspective on learning and, to a limited extent, the IT higher education research literature, we have identified and implemented learning context factors and learning activities

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