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## Chapter VII

# Developing and Supporting Research-Based Learning and Teaching Through Technology

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### ABSTRACT

*The chapter draws on the work of two national projects concerned with developing research-based approaches to learning and teaching and supporting these through technology. A pedagogic framework underpinning the design and delivery of such courses is outlined. In exploring the usability of online environments (programs) for research-based learning and teaching, the chapter discusses issues and needs in the context of operational usability. Factors relating to educational and technological usability are presented in the light of development of pedagogic principles for research-based learning, analysis of existing online systems and tools to support such courses, and evaluative case studies considering approaches in specific subject areas. The solutions to technological support implemented and evaluated through the pilot courses are discussed and generic educational good practice is highlighted throughout.*

## INTRODUCTION

The chapter draws on the work of two national projects concerned with developing research-based approaches to learning and teaching and supporting these through the use of technology. A pedagogic framework underpinning research-orientated approaches to the design and delivery of courses is outlined. Specific approaches to the selection of learning activities are discussed in the light of disciplinary variances in research processes. The solutions to technological support, implemented and evaluated through the work of two national teaching development projects, are discussed. A range of case studies is presented, which serves to illustrate course approaches across a number of subject areas that support students online in developing high-order learning capabilities. Generic lessons learned are highlighted throughout.

In exploring the usability of online environments (programs) for research-based learning and teaching, this chapter deals with two key educational objectives:

- (1) supporting inquiry, debate and creativity through sharing and review of work using Web publishing and discussion programs and
- (2) augmenting student collaborative learning by accessing and networking with remote experts using Web-mediated videoconferencing and other communications programs.

Issues and needs for both aspects are discussed in the context of operational usability. Factors relating to educational and technological usability are presented in the light of development and evaluation work in the following areas:

- pedagogic principles for research-based learning underpinning the course approaches;
- analysis of existing online systems and tools to support research-based courses; and
- case studies illustrating the use of technological systems across a range of subject areas.

## BACKGROUND

The term “research-led” is widely used in the UK higher education sector to describe universities that demonstrate a high capacity for good quality research whilst claiming that their research informs and enhances their teaching. A link between research and teaching has been both supported and contested for many years (Brew & Boud, 1995, p. 262; Centra, 1983; Entwistle, 1998; Robbins, 1963). For a recital of this highly politicised debate, see Ramsden and Moses (1992, p. 274), Hattie and Marsh (1996, p. 511), and Roach, Blackmore, and Dempster (2001). It is true to say that in research-led universities, staff are highly research-orientated and teaching programs are often strongly informed by staff research interests. The

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