Chapter XXIII
Technology, Curriculum, and Pedagogy in the Evaluation of an Online Content Program in Australasia[1]

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ABSTRACT

The question addressed in this chapter is: What is the evidence for the effects of online programs of learning objects on motivation and learning? Much of the research available on information and communication technologies (ICTs) generally yields short-term or ambiguous findings, with recommendations that centre on the need for more attention to theorizing and documenting: how ICTs can be located within sequences of curricular learning; the kinds of learning that new ICTs offer (factual, conceptual, application, and transfer); and the ways in which existing pedagogies and uses of ICTs both adapt to and transform one another. This chapter aims to advance discussion of these issues by summarizing ongoing evaluations of a large-scale national program of online learning objects across key curriculum areas, drawing on survey and interview data, and a field experiment in which the effects of exposure to learning objects on learning outcomes in mathematics are documented.

INTRODUCTION AND BACKGROUND

Investment in ICTs by educational systems has grown dramatically over the last decade, as has research evaluating the efficacy of those investments. By way of background to the data summarized later, this section presents a brief, selective summary of this research. (For more extensive coverage, see the British Educational Communications and Technology Agency (BECTA) site; Cox, Abbott, Webb, Blakeley, Beauchamp, & Rhodes, 2003; Freebody, 2005, 2006; Mitchell & Savill-Smith, 2004; Owen, Calnin, & Lambert, 2002; Parr, 2006). We follow this research summary with a brief description of the origins of the national program under examination in the middle sections of this chapter.

Overall, it is striking how many research reports and summaries have signalled their "disappointment" with regard to the ratio between, on the one hand, effort and expenditure, and, on the other, the dissemination, creative use, and efficacy of ICTs in educational settings. Nichol and Watson's (2003, pp. 132-133) conclusion, following extensive examination of the educational uses of ICTs in the UK, gives the flavour:

the role and nature of ICT in schools is problematic, with minimal involvement of ICT across the curriculum in the everyday teaching of pupils ... Rarely in the history of education has so much been spent by so many for so long, with so little to show for the blood, sweat and tears expended.

Similarly, Jamieson-Proctor, Burnett, Finger, and Watson (2006, p. 511) concluded their extensive survey of ICT usage in classrooms in Queensland Australia with this:

there is evidence of significant resistance to using ICT to align curriculum with new times and new technologies ... current initiatives with ICT are having uneven and less than the desired results system wide.

It is clear that the introduction of materials based on ICTs into classrooms has not, of itself, been shown to have brought about changes that commentators claim are needed for new forms of economic and civil life (e.g., CEO Forum, 2000).

Some studies have focussed on rates of ICT usage in schools. Pittard and Bannister (2005), for example, drew together studies that reported simple rates of uptake of ICTs across a range of curriculum domains in UK. They showed that reported usage is increasing, but that this increase has not been consistent across curriculum domains: There has been increased usage in mathematics and science, but substantially less in English and other arts/humanities-based subjects.

On the question of the outcomes of ICT usage, Pittard and Bannister (2005) sounded three cautionary notes. First, they noted that some promising outcomes may appear only after the passage of some considerable time, but also that, contrariwise, some other effects may in fact disappear. The research is not yet at a point of offering guidance on which kinds of outcomes will be visible over what timeframes. Second, Pittard and Bannister (2005) noted that we might expect differential consequences for learners with varying linguistic, cultural, and socio-economic characteristics. Finally, they posed the puzzle of how we may determine how much of an effect is due to the use of the technology itself, how much to the work of the teacher, and how much to other factors.

Three technology-related features that Pittard and Banister (2005) used to account for the minor gains observed in some studies were:

1. The enhanced presentational capabilities available for lesson and assignment work