

Chapter 57

Technology–Enhanced Learning: The Introduction and Use of Information and Communication Technology in Special Education

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ABSTRACT

Small, modestly funded and resourced schools can be disadvantaged by limited access to information and communication technology (ICT). This chapter outlines a two-year project conducted in six small special schools located in metropolitan and rural communities. The project was designed to increase the participating schools' ICT capabilities and promote the use of technology to deliver the curriculum in efficient and appealing ways to their students with a diversity of intellectual and behavioral difficulties. An ICT specialist supported the schools over the course of the project and promoted the introduction of Universal Design for Learning. At the conclusion of the project all schools had made notable gains in acquiring state-of-the-art technology. Teachers and students had become capable and enthusiastic users of hardware and a range of operating and educational software.

INTRODUCTION

These days, it is difficult to conceive of an organization or community that is not connected to the Internet or an individual who is not affected by information and communication technology (ICT) in some aspect of their daily life (see e.g.,

Broadley, 2007; Brown, Wilson, Fluck, & Fitzallen, 2007; Jamieson-Proctor, & Burnett, 2006). Today's youths, in particular, interact readily with ICTs and expect technology to be available at all times; an expectation that has been realised through the invention of web-browsing digital phones and organizers (see e.g., Ainley & Enger, 2007; Ainley & Searle, 2005; Oblinger & Oblinger, 2005; Prensky, 2006; University College London, 2008). Of course, not

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all young and older people have ready access to computers and web-based information resources. For example, while Australia is a technology-smart country, access to the Internet is unavailable to about 40% of households, and there are also regional limitations that reduce accessibility even further (Australian Bureau of Statistics, 2007).

Along with its proliferation, ICT has become an integral part of teaching and learning at all levels of education, although availability and access varies significantly from setting to setting, depending upon human and physical resources. And even when ICT is available, many teachers remain as unwilling users. Their reluctance to use ICT (in particular, computers) can result from inadequacies in available equipment, continuing frustration and disruptions from unreliable hardware and software, the lack of technical support, and limited time in which teachers can learn about digital resources and prepare technology-enhanced lessons (see Baskin & Williams, 2006; Broadly, 2007; Derry, 2008; Elliott, 2005; Rablin, 2006; Reynolds, Treharne, & Tripp, 2003).

This chapter deals with the challenges of computer-supported education in schools where funding and resources are limited. The chapter deals specifically with a project undertaken in six small special schools. After a brief introduction, the chapter is divided into four substantive sections. The first section (ICT-Friendly Classrooms) outlines two conceptual frameworks for inclusive education that incorporate ICT: Universal Design for Learning (UDL) and curriculum differentiation. The second section (Technology-enhanced Learning) presents an argument that the successful introduction of technology involves the counterbalancing of influences within a teaching-learning context and includes a brief description of how ICT can be introduced and supported in small and/or modestly funded schools. The third section (Solutions) summarises project findings and the final section (Future directions) comments upon the potential for applied research using a teaching-learning ecology framework.

BACKGROUND

Federal and State governments in Australia and in many other countries have emphasised the importance of ICT in the continued development of the national economy (e.g., Department of Education, Science and Training, 2001). In accord with this, many school communities moved quickly to develop hardware and software resources to assist in the delivery of the curriculum and assess students' learning outcomes. Yet despite the increasing presence of computers in classrooms and the rapid expansion of the Internet, computers are still not regularly or consistently used in many classrooms (Baskin & Williams, 2006; Reynolds et al., 2003). It is keenly recognized that even when teachers use ICT in their teaching, they are not only under-using this communication medium with which their students are familiar and comfortable, but in doing so, they risk under-preparing other students for new ways of learning and gaining access to publicly available knowledge (Department of Education Employment and Workplace Relations, 2003; Fleming, Motamedi, & May, 2007; Ministerial Council on Education, Employment, Training and Youth Affairs, 2008; Oliver, 2005; Rablin, 2006).

Some writers have proposed the view that students consider technology as a necessary tool for learning although the disposition of some teachers that ICT is an ornamentation or a luxury goes some way toward inhibiting student access to, and use of ICT in the classroom. Certainly, there are reports in the professional literature of successful implementation of technology-enhanced learning. Condie, Munro, Seagraves, and Kenesson (2007), for example, reported that ICT has a major impact on students learning outcomes and classroom practices. Notwithstanding this, the problems of adequate and reliable access to computer resources in schools remain issues for many teachers and school administrators, and this is especially the case for those who work in settings in which the consumers of education are intellectually, socially, and/or economically disadvantaged.

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