

Chapter XXI

Measuring and Evaluating ICT Use: Developing an Instrument for Measuring Student ICT Use

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ABSTRACT

Teaching and learning in the 21st Century requires teachers and students to capitalise upon the relative advantage of integrating Information and Communication Technologies (ICT) to enhance current curriculum, pedagogy and assessment approaches, as well as transform teaching and learning. While most educational systems agree that ICT has the potential to transform teaching and learning, attention has been given recently to the challenge of how to measure and evaluate the impact ICT is having on teaching and learning. This Chapter argues that the most important focus in measuring ICT use needs to be on student use of ICT, as policies and teacher professional development initiatives by themselves are insufficient to ensure that student learning is either enhanced or transformed through ICT use. Insights are provided into the development of a contemporary instrument, for use by Education Queensland, Australia, which aims to measure teacher perceptions of the quantity and quality of student use (as opposed to teacher use) of ICT in the curriculum. The instrument enables teachers and schools to identify their current and preferred levels of student ICT use, and from this, to generate discussion about the integration and transformational potential of ICT and to develop strategic plans to achieve their preferred level of student use. This Chapter also provides summaries of the implementation of the instrument in two large Queensland education systems, and argues that ICT research, such as this approach, which enables large scale, evidence-based research to measure student outcomes as a result of using ICT in the curriculum should be a matter of priority to effectively monitor and manage learning with ICT.

INTRODUCTION – THE CHALLENGE OF IMPROVING STUDENT USE OF ICT

Internationally, there has been an increase in the provision of computer and Internet access to students and teachers in schools, together with increases in access to computers and the Internet for students in their homes. These increases are reflected in international data which show increased student access to ICT. For example, the Organisation for Economic Co-operation and Development's (OECD) Programme for International Student Assessment (PISA), undertaken in 2000, 2003, and 2006 which is "a survey of students' skills and knowledge as they approach the end of compulsory education" (OECD, 2005a), included questions which asked students about their use of computers and their attitude towards them. The OECD reported that in 2003, 84.19% of students indicated they had access to a computer at school, and 79.44% indicated they had a computer to use at home. The PISA 2006 study reported improved access with 95.57% of Australian students indicating they had a computer for school use and 90.99% had access to the Internet at home (OECD, 2007). However, when frequency of computer use was examined in 2003, only 7.34% of students reported that they used a computer at school 'almost every day' (OECD, 2005b). While improvements have occurred, with 23.31% in 2006 indicating they used a computer at school 'almost every day', this still means that ICT is integral to learning for only 1 in 5 Australian 15 year old students (OECD, 2007). Elsewhere, Cuban has noted that the claims for improving student use of computers in schools have been overly optimistic (Cuban, 2000) and refers to computers as being 'oversold and underused' (Cuban, 2001). As Cuban (2000) indicates, in referring to the United States of America:

The facts are clear. Two decades after the introduction of personal computers in the nation, with

more and more schools being wired, and billions of dollars being spent, less than two of every ten teachers are serious users of computers in their classrooms (several times a week). Three to four are occasional users (about once a month). The rest--four to five teachers of every ten teachers--never use the machines for instruction. When the type of use is examined, these powerful technologies end up being used most often for word processing and low-end applications in classrooms that maintain rather than alter existing teaching practices.

Thus, we suggest that, while possession of infrastructure such as computers and Internet access are important, in themselves they are insufficient to guarantee student and teacher use of ICT for teaching and learning. Similarly, immersing teachers in professional development also does not necessarily translate to effective use of ICT by students for enhancing learning. While there has been almost universal support to "better exploit the potential of ICT" (Department of Education, Science and Training (DEST), 2002, p. 3):

...this potential has not been realised in any significant way, particularly the potential to transform how, what, where and why students learn what they do. While there are only limited examples of the transformative power in the educational sector, experience from industry and other sectors clearly demonstrates that new times need new approaches, and that the nature and application of ICT enable that transformation.

Teaching and learning in the 21st Century requires teachers and students to capitalise upon the relative advantage of using ICT to both enhance current curriculum, pedagogy and assessment approaches, as well as transform existing practices. These challenges have been reflected in the policies and planning of many educational systems throughout the world, such as the policy roadmaps for the use of ICT in education in the

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