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Is school-wide adoption of ICT change for the better?

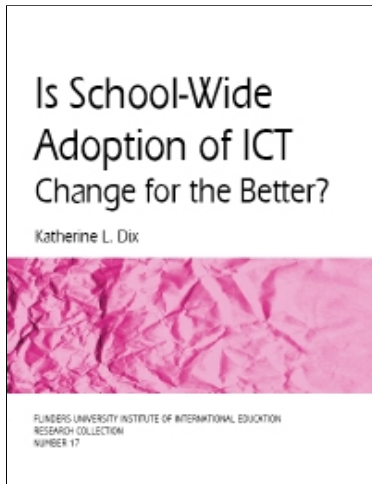
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Is School-Wide Adoption of ICT Change for the Better?

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Preface

The use of information and communication technologies (ICT) in schools is now an intrinsic part of students' learning, both inside and outside the classroom. The adoption and impact of ICT on teaching practice and learning outcomes has been a source of keen interest among government policy makers, school leaders, teachers and researchers worldwide. Research in this field has principally centred on pseudo-scientific comparative studies conducted mainly in the United States and the United Kingdom, with a focus on academic achievement. Few empirical studies have been conducted in Australia, or worldwide, that focus on student attitudinal outcomes framed within a design-based paradigm that spans several years.

The overarching purpose of this study is to investigate longitudinal change in school climate through its influence on students and teachers, during a period of school-wide transition as ICT were embedded throughout mainstream curricula. An assessment of the impact of ICT on student attitudinal outcomes, in particular, changes in self-esteem over a three-year period of school-wide ICT adoption, is provided through the examination of factors affecting teaching

practice and students' attitudes towards computers and school. A feature of this study is the development of a theoretical and practical framework, DBRIEF (Design-Based Research in Innovative Education Framework), which underpins the design and conduct of the research, and addresses technical issues involved in specifying appropriate methods of analysis, taking full advantage of the hierarchical and longitudinal nature of the data.

A total of 219 teachers and 2560 students from six metropolitan public primary and secondary schools in South Australia participated in the study. The main method of data collection involves the use of online questionnaires suitable for repeated administration over the three-year lifespan of the study, and appropriate for all teachers and those students in Years 5 to 7 in primary school and Years 8 to 10 in secondary school. The principal analytical strategies employed in this study use structural equation modelling and hierarchical linear modelling in order to develop models to assess the influence of potential student, teacher and school factors on student attitudinal outcomes in a climate of change.

School-wide integration of ICT is found to promote significant change in teaching practice and has benefits for students, particularly those with low self-esteem. Moreover, it also appears to benefit girls, by reducing the gender gap in

which boys traditionally maintain higher self-esteem. Students' self-esteem and their attitudes towards computers are found to improve significantly in an increasingly ICT-rich learning environment. However, as computers became the norm rather than a perceived highlight in daily school life, the influence of

technology on students' attitudes towards school becomes less important. Students are extended through word-processing, drawing and presentation software to edit, revise, and ultimately produce higher quality work in a wider variety of formats, and these efforts are further enhanced in schools with good technical support and the experienced guidance of ICT specialist teachers.

Furthermore, ICT-rich homework appears to enhance students' attitudes towards school, but particularly among primary students, drawing attention to the importance of equitable home computer access.

This study posed many challenges in the collection and analysis of hierarchical longitudinal data where appropriate methods of analysis are not widely applied or well established. The management of these challenges, together with the practical and theoretical implications of the study, should re-inform original

theory and design, with the underlying premise that change is sustainable and that innovation in classroom practice should be ever evolving. In this way, this project makes a significant contribution to the field of educational innovation.
