Chapter 6
The Impact of Interactive Whiteboards on Classroom Interaction and Learning in Primary Schools in the UK

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ABSTRACT
The UK Government’s Primary National Strategy undertook a pilot programme “Embedding ICT in the Literacy and Numeracy Strategies” where interactive whiteboards were installed in the classrooms of teachers of 9-11 year old students in more than 80 schools in six regions of England. Research to evaluate this project collected multiple sources of data, including students’ attainment, structured lesson observations and the perceptions of teachers and students. Results suggest that the use of the interactive whiteboards did lead to significant changes in teachers’ practices in the use of technology and in aspects of classroom interaction, and that the perceptions of those involved were overwhelmingly positive, but that the impact in terms of students’ attainment on national tests was very small and short-lived. This raises questions about the integration of new technologies into classroom teaching and how such technologies might improve teaching and learning.

INTRODUCTION
The aim of this chapter is to present a critical analysis of the findings from a large-scale research project in the UK where electronic or interactive whiteboards were introduced into over 200 classrooms of the teachers of 9-11 year olds in England (Higgins et al., 2005). The initiative was explicitly designated as a national pilot project with the key goal of raising levels of attainment in the pilot schools in literacy and mathematics, which are the central curriculum focus of the UK Government-funded Primary National Strategy (i.e. strategy for raising standards in primary or elementary schools across England). Some aspects of the project have been published elsewhere, such as the initial literature scoping to identify likely issues with the evaluation (Smith, Higgins, Wall & Miller, 2005), changes in patterns of interaction identified through systematic observation over the course of the research (Smith, Hard-
The Impact of Interactive Whiteboards

The Impact of Interactive Whiteboards (man & Higgins, 2006), two analyses of students’ perceptions using different methodologies (Hall & Higgins, 2005; Wall, Higgins & Smith 2005), an analysis by gender of the impact on classroom interaction (Smith, Higgins & Hardman 2007) and a discussion of the limitations of analysis of question types without investigating the subsequent discourse moves (Smith & Higgins, 2006). This chapter therefore aims to synthesize key aspects of the findings in relation to the overall objectives of the research in terms of its national policy objectives and to identify key issues for wider research into the use of interactive whiteboards in education. The process of the research also raises wider questions about the way that educational research is valued and used at policy level in the UK and more general challenges in evaluating the impact of technologies on education.

BACKGROUND

The UK has invested heavily in promoting the use of educational technologies in primary or elementary schools. Initiatives such as training for teachers in the use of information and communications technology in the late 1990s aimed to offer a course of training to all serving school teachers in the UK at a cost of about $800 million. Additionally investment in hardware, software and networking (such as the development of a “National Grid for Learning”) have similarly seen considerable sums (over $3 billion up to 2008).

At the policy level, the introduction of interactive whiteboards was seen as a way to integrate technology into teaching in primary or elementary schools and at the same time support the development of “whole class interactive teaching” (Reynolds & Muijs, 1999) in order to improve standards of attainment. Other goals were informally identified, such as greater engagement of boys in lessons to address their perceived underachievement. These aims were discussed with the funders of the research and this helped to shape the development of the research methodology.

The implementation of training and the support for the teachers involved was also studied as part of the research. A model was developed in the project where one full-time specialist teacher supported groups of about 20 teachers in each region. Training materials were developed centrally, then revised as they were used locally. A temporary website was created to exchange ideas and teaching resources (used mainly by the specialist teachers, but also by a number of classroom teachers in the project). In addition, most regions established support groups which met more informally on a regular basis. The approach to supporting teachers in using the technology effectively was a key part of the pilot programme.

RESEARCH APPROACH

The research team adopted a pragmatic approach to the evaluation of this major national initiative working within the limitations imposed by the sponsors and the funding available. The main driver of the research was to evaluate the impact of the initiative on national test results with an implicit rationalist paradigm (Young, 1999) but influenced by post-positivist approaches such as scientific realism (Pawson & Tilley, 1997) and responsive evaluation (Stake, 2004). Working with the sponsors of the pilot project, the team planned a multi-method approach to the evaluation using complementary qualitative and quantitative methods. The model of impact the research team used involved short-term indicators (participants’ perceptions and changes in patterns of classroom interaction) as well as outcomes (students’ attitudes and attainment). A review of the available evidence at the outset of the project indicated that the perceptions of those involved in the introduction of such technologies is generally positive, but that information about the impact in terms of changes of patterns of classroom interaction or measures of attainment were scarce (Smith et al.,
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