

# Chapter XXXV

## A Case Study of Contrasting Approaches to Integrating Technology into the K–5 Classroom

**Rebecca Brent**

*Education Designs, Inc., USA*

**Catherine E. Brawner**

*Research Triangle Educational Consultants, USA*

### **ABSTRACT**

*Two elementary schools received large three-year grants to support the integration of technology into their curricula. They each followed the same prescribed integration model but made substantially different implementation decisions. The differences are reflected in their responses to two questions:*

1. *How should limited resources be spent for technology equipment and how should the equipment be deployed in the schools?*
2. *How can teachers be persuaded to integrate technology into their classes and throughout the curriculum?*

*The authors applied standard qualitative analysis techniques to data that include transcripts of focus groups and interviews with teachers and administrators, field notes from classroom observations, training sessions, and grade level collaborative planning sessions, and responses to three teacher surveys. The contrasting outcomes in each school provide a basis for conclusions and recommendations regarding best practices in technology integration.*

## INTRODUCTION

Technology holds tremendous promise for improving teaching and learning by engaging students in more learner-centered activities (Rice & Wilson, 2002) and enhancing communication, collaboration, and creative problem-solving (Dias & Atkinson, 2001), and many studies have demonstrated connections between appropriate use of technology and student achievement (Earle, 2002). Nevertheless, despite years of expenditures on equipment and professional development, technology has not fundamentally changed teaching practice in most schools. Even as access to computers, the Internet, and other high-tech tools has increased dramatically throughout the world (OECD, 2003), technology has failed to achieve widespread integration into daily instruction (Earle, 2002; Fishman, 2006).

*Though technology is becoming a widespread presence, it is not for the most part central to the curriculum of schools. It is primarily used as an adjunct or add-on, broadly underutilized in terms of its potential, and certainly in terms of the investment.* (Fishman, 2006, p. 1)

What happens in most classrooms with access to technology is that the teachers use the new tools primarily to do the same things they have always done. For instance, a teacher may use a projector and interactive whiteboard instead of a traditional chalkboard to present material and for practice and review activities. When teachers use technology in less traditional ways, they do it by sending students to the computer lab as a supplement to “regular” instruction rather than making the technology an integral part of the curriculum.

So, what is keeping teachers from fully engaging with and making use of the powerful technological tools to which they have access? A number of barriers have been identified in the literature, including inadequate equipment, funding,

administrative support, time, and training, as well as teachers’ pedagogical beliefs that inhibit their ability to make effective use of technology (Rice & Wilson, 2001; US Dept. of Education, 1999). Other barriers are excessive curricular and administrative demands, classroom management issues, and general resistance to change (Shamburg, 2004; Earle, 2002; Pelgrum, 2001). In a major statewide study in Massachusetts, O’Dwyer, Russell, and Bebell (2004) found that teachers were “much more likely to use technology to deliver instruction...when they teach in schools...that emphasize professional development around technology integration, pressure teachers to use technology, ensure availability of and access to technology, and limit...restrictive policies” (p. 5). Ottestad (2008) defines the “digitally competent school” as one that promotes technological skills of teachers and a culture of sharing of knowledge, systematic technology planning with pedagogy at the center, and strategic investment in resources.

Programs such as *Apple Classrooms of Tomorrow* (Apple Classrooms, n.d.) have been developed to help teachers integrate technology effectively. In 2005, an entire issue of *Human Technology* was devoted to pedagogically innovative uses of information and communication technologies (Kankaanranta, ed., 2005). The authors of the special issue were all participants in the Second Information Technology in Education Study (SITES), a 2000-2002 multinational comparative study of technology applications in education. The U.S. Department of Education has encouraged integration efforts with its *Enhancing Education Through Technology* (EETT) state block grants offered each year since 2003 to improve student achievement through the use of technology (US DOE, n.d.).

Levin and Wadmany (2008) note that the factors affecting integration of technology are interrelated and that more qualitative studies are needed to fully explore those relationships. Qualitative studies can be used to fully explore the context in which integration takes place and

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