

Chapter XIV

Effecting Change in the Classroom Through Professional Development

Computers are not an end in themselves. The goal of technology integration into the classroom and curriculum is not to expose students to computers and the Internet. Technology, by definition, is a tool. That tool should be serving a greater purpose, and what that purpose is for you may be very different from what it is for the school down the street (Dockterman, 1998, p. 21).

Over the last 10 to 15 years, a vast amount of money has been invested in computer technology for public education, including establishing or upgrading computer labs, school and classroom connectivity to the Internet and wide area networks, and providing at least one Internet-ready computer per classroom. The Department of Education's Education Rate, or E-Rate, initiative¹ has made access to computing and Internet connectivity easier, reducing the ratio of students to computers to the 5 to 1 ratio that "many experts consider ... a reasonable level for the effective use of computers within the schools" (President's Committee of Advisors on Science and Technology 1997, p. 14, as cited in Cattagni & Farris, 2001). In addition, we have seen the introduction of mobile computer labs in schools and, more recently,

smartboard technology in classrooms. Each innovation has represented a decision by a school district to use scarce resources to bring computing power into classrooms to affect teaching and learning. However, just because tools are present in classrooms does not mean teachers know how to make the most of those tools, so professional development opportunities have been created to help the teachers learn how to use the tools. Not all professional development programs have been equal in helping teachers make the most of new technologies in their classrooms.

Organizations, conferences, and journals have been dedicated to presenting research on the impact of computers on learning and offering best practices for teachers and administrators. Examples of implementation programs, professional development models, and classroom management tips have been discussed in all venues, with the intent to influence practice in school districts and classrooms. However, the real tests of the technology impacts in classrooms and on student learning are (1) whether the teacher knows and demonstrates how to use computers in pedagogically appropriate ways, and (2) whether student achievement is enhanced as a result.

The history of classroom computing is brief. Early uses of computers were mostly for drill-and-practice of skills, and/or for learning programming languages like LOGO or BASIC. Computer training for teachers included how to use a computer for computer-assisted instruction and/or how to use computers to create worksheets, classroom banners, or acetate slides to use with the overhead projector. Other than drill-and-practice, students used computers in creative ways through paint and draw programs, but not much else until the late 1980s when computer productivity tools came into schools. Then some enterprising teachers saw the power of word processing software in helping students with the writing process. Overall, the computer has been an add-on to the classroom, not a must-have for teachers.

The fact that most teachers have only used classroom computers with their students for games or drill-and-practice to reinforce concepts, or as a reward for good behavior, is disappointing, but not news (Cuban, 2001). Most public school teachers were not taught in elementary, secondary or post-secondary classrooms that used computers at all, or they were used only to reward good behavior. If they had computers in their public school education it was most likely in a computer lab divorced from the curriculum in the rest of the school. Therefore, they cannot have a mental paradigm for infusing computing seamlessly into classroom activities. In addition, since the NCLB legislation (U.S. Department of Education, 2001), several school districts have tightly controlled math and literacy curricula, leaving teachers very little latitude for incorporating computer solutions to support their students' learning.

Noted in Chapter I, as computers became more powerful and available in classrooms, as software applications evolved beyond electronic programmed texts, and as the Internet became available to schools, the potential use of computers began to move away from passive learning modalities to active learning practices. Unfortunately, other than the Apple Computer experiments in the late 1980s and early 1990s, pro-

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