Chapter 7.1
Critical Barriers to Technology in K–12 Education

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INTRODUCTION

Those who are fortunate enough to be associated with K-12 education during this first decade of the 21st century will witness tremendous evolutionary—even revolutionary—changes throughout those institutions. The interrelated dynamics of public education, the IT industry, and the evolving "digital society" are already combining to produce a variety of entirely new models for K-12. Although those models are indeed emerging, significant change will come at a pace that is perhaps somewhat slower initially than some would prefer. K-12 education is, after all, an institution rich in tradition and culture, and often slow to change. Nonetheless, as the presence and reach of new technologies—the Internet in particular—reach critical mass, that pace will quicken, and by the year 2010, school age children will enjoy an educational experience profoundly different from anything previously known. Profound change usually occurs when not one, but several change agents come together, either deliberately or coincidentally, and interact—often sparked by some sort of catalyst. This type of interaction is occurring throughout public education today. In this case, the change agents at work include K-12 institutions, the evolving IT industry, and the rapidly emerging digital society.

K-12 INSTITUTIONS

Public education leaders are facing tremendous challenges and unclear demands as we begin the new millennium. The call for improved student performance—education's "bottom line"—is pervasive and louder than ever. At the same time, state and federal departments of education have, or are creating, high stakes examinations around tough new curriculum standards designed to determine "how well" our students are learning—as well as which schools are not performing as well as they should. *Accountability* is a word that is part of virtually every current discussion about education, yet there is little consensus around its precise meaning or how to measure it. The need for productive school-community collaboration—the

so-called school-to-home connection—is greater than ever. More parents are becoming engaged in their children's education and expect to have ready access to information about grades, attendance, discipline, content mastery, test scores, and so forth. Privacy and security concerns, however, are prevalent, with some parents adamantly opposed to making that information available via the Internet (even when appropriately secured). Local and state leaders now see the value in *data-driven decision making.* This is creating an insatiable need for program-level information and seamlessly integrated information systems that produce it. Simultaneously, costs for IT support continue to rise, making the challenge of providing and supporting a technology environment rich in educational content, valuable information, and easy-to-use tools quite daunting.

THE IT INDUSTRY

This is an industry that essentially reinvents itself every 12-18 months. And while technology is without doubt an enabler of change, the Internet is truly the catalyst that has sparked (and is fueling) the emergence of new models for K-12 education. Still, back in our schools and offices, the need for interoperability among disparate technology-based systems is increasing. The Internet, and specifically the Web, is greatly reducing the effects of this issue. Most of what is sold as "integration" on the Web today is nothing more than Web pages with multiple URL links to other independent sites. As educational leaders recognize the value of seamlessly integrated systems for managing curriculum, instruction, and assessment, the demand for appropriate and powerful integration technologies will follow. In short, as the same people who are engaged in public education today—teachers, parents, students, and administrators—realize that they are conducting much of their lives online, they will want to know why public education cannot be the same.

THE FUTURE—YEARS 2003 AND 2010

While technology will affect virtually every aspect of K-12 education during this timeframe, three particular areas will feel the effects most profoundly. First, educators will realize—indeed, are already realizing—that managing curriculum, instruction, assessment, and associated individual and aggregated student information as a seamlessly integrated thread, extending from the classroom through the school, district, and state, will have dramatic and positive effects on student performance. Correspondingly, the traditional divide between instructional and administrative technology will be seen as nonproductive as educators learn that the benefits of delivering instruction with technology cannot be measured or realized without integration with systems that manage curriculum, assessment, and student information.

Second, educational leaders will discover the availability and benefits of high-value, strategic information in support of decision making. The same integration activities described above will result in a base of information that, when coupled with powerful decision support and knowledge management tools, will enable leaders to gain new and profound insights into the educational process. In addition to the ability to make—often for the first time—truly informed decisions, these capabilities will help educational leaders understand *what makes education work.* Interestingly enough, development of these capabilities will occur not only because educators realize the value, but because community members who want to hold their school leaders accountable will demand it.