The Need for a Well-Managed Technology Infrastructure

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INTRODUCTION

As commonly defined, the "digital divide" means inadequate access to the Internet in urban or rural areas where telecommunications resources are limited or non-existent. This gap normally exists because of an insufficient economic incentive for investment by telecommunications providers. For educators, the digital divide means that students and teachers are unable to learn and apply the technologies most used by other educators, business, and industry in the information age because these technologies are not available. When there is inadequate access to the tools needed to learn and work in the information age, a barrier is placed between teachers, students, and successful achievement of learning goals.

BARRIERS AND POSSIBLE SOLUTIONS

Barrier #1

Most of the nation's school systems do not have a dependable, scaleable infrastructure to support high-quality, technology-centered school management, instruction, and assessment.

Another significant barrier, not immediately obvious or as politically charged as the "digital divide," is an unreliable or unstable network infrastructure. Without a robust and scaleable infrastructure, a K-12 school will not be able to support the kind of technology-centered teaching and learning that should be occurring in today's schools if we are to effectively prepare students to "be all that they can be" in today's technology-rich society. The quality of the Internet connection to a school is important, but irrelevant if the network is not reliable. The teacher who is attempting to incorporate Internet resources into her daily instruction is not impressed that the school has a T1 connection if the workstations in her classroom cannot access it. The recent landmark study by the United States Department of Labor indicated that approximately 90% of all future careers will require a range of technology skills that can only be well developed through extensive use of the new technologies in both K-12 and higher education. A world-class education in the millennium will require that students and faculty at all levels become expert in the use of the tools and processes that have been the energizer in making the United States the most powerful and influential nation in the world.

- **Solution:** Raise the awareness of school policymakers nationwide to the critical nature of this need if the National Technology Goals are to be realized; highly publicize and share outcomes from those few school districts, schools, and colleges that have quality infrastructures.

Barrier #2

Sophisticated, 24/7 network management is not yet seen as a mission-critical function by school boards and administrators.

Properly installed, standards-based networks require support. Even a high-quality WAN-LAN network must be closely and expertly monitored and managed to ensure the kind of dependability that is essential to widespread and effective use in school management and instruction. Just imagine the maintenance and support required for networks that may have design flaws or that have grown unevenly over the years under pressure of demands for increased access. Unless problems are anticipated and rapid responses are available, students and teachers lose valuable learning and research time; the emotional excitement and support for technology then diminishes. Further, networks are constantly growing and changing, and without the ability to monitor and predict network performance, educators will continue to address any technology-related problems in a crisis mode. This problem is even more troublesome when we realize that network management, maintenance, and support are not available in most schools and districts.

- **Solution:** As with barrier #1, we must raise the awareness of school policy-makers to this critical need, and highly publicize those few places that are developing network operating centers (NOCS) or already have them in place. There is also the need to continue to develop new instruments for technically monitoring and measuring all key components of school networks. "Network operations support" sounds like a big solution costing big money and affordable only to big districts. The systems required for effective monitoring and maintenance of networks can be shared among school districts—which means that the costs can also be shared.

Barrier #3

Most major corporations selling technology solutions to schools have had little real experience in working with education and are trying to "force-fit" solutions developed for businesses into educational settings that are far different from those business needs for which they were originally created.

Education at all levels, K-16, is somewhat unique in that every hour or so, the teacher receives a new set of 20-50 learners who, in a technology-rich classroom, would become engaged simultaneously. This is quite different from what happens in a bank or a 7-11 store in which customers stream in a few at a time. The demands on the technology in the two kinds of places are quite different and require quite different solutions. Because of funding limits and variations, it is also probable that each of the nation's 112,000 schools is at a different place, technologically, and each needs a customized solution.

- **Solution:** Schools and colleges should seek outside help with planning and implementing solutions that are designed to meet the unique and comprehensive technology integration needs of a specific school, school system, or college. Engage technology providers who have had extensive and successful experience in working with educators—with schools and colleges. In the planning process, engage the full spectrum of educators to be served by the new networks in order to ensure that they will best meet their main educational needs and objectives.

REFERENCE

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