Bridging the Digital

Christine Y. Mason and Richard Dodds

Schools must find ways to provide equal access to technology for all students.

Students today are surrounded by technology. Many of them have laptops, cell phones, pagers, and CD or MP3 players. Their technological savvy has challenged schools to make greater use of computers and the Internet in their curricula. Unfortunately, not every student can claim the same level of access to this technology and the inability to keep pace has created a digital divide that continues to widen.
IN BRIEF

This article examines the growing digital divide in public schools between students who have access to computers and the Internet and those, especially minorities and students with disabilities, who do not. The article also explores emerging technology that could impact classroom instruction in the next decade.
In schools that have the resources, a classroom visit might show teams of two or three students huddled around computers, finding information and completing assignments. In schools with fewer resources, the ratio of students to computers is higher and it becomes more difficult for teachers and students to rely on computers as a regular tool for research and learning (NCES 2000).

The digital divide particularly affects students who are black, Hispanic, Native American, and poor. They are far less likely to have computers or Internet connections at home than their Caucasian or Asian peers. While two-thirds of white children have gone online, just 45 percent of black children and 37 percent of Hispanic youth have ever done so (NCES 2002). For those students without a connection at home, schools are the primary source of computer access and often the only place they can go online (Kaiser 2004). In addition, many students with disabilities cannot use computers or participate in online activity because the equipment in their schools is not compatible with their learning or physical needs.

The Technology of Tomorrow

As technologies continue to advance and provide enhanced resources for learning and research, critical questions arise: Will these technologies be available to all schools? Will they enable schools to close or at least narrow the digital divide? We seem to be at a pivotal point in addressing inequities. Failure to provide adequate technological resources for all translates into failure to provide quality education, creating an even greater divide between affluent and poor school districts.

Some insights into the possibilities of future technology can be gained by examining five recent innovations that are likely to impact elementary schools in the next five to 10 years.

**Wireless Networks.** Wireless networks provide an alternative for schools that aren’t adequately wired to access the Internet. They can provide improved access to online learning as well as the ability for students to receive distance learning instruction from teachers with certain skills and specialties not available at their schools.

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**Portable Technologies.** An example of the possibilities of small, portable technologies is a projected high school in Philadelphia where every student will have wireless personal tablet computers and PDAs, rather than traditional desktops (Dean 2003).

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**Attractive Technologies.** Another trend is the continuing enhancement of computer-aided instruction, utilizing features from video and computer games to motivate students and keep them engaged. These software programs often provide immediate feedback and, with the inclusion of Universal Design for Learning (UDL), they can provide information in formats that can accommodate a wide array of learning styles and needs. A major time-saving feature of UDL is that supports are built in as the software is manufactured and therefore are ready when teachers and students need them. With UDL, teachers can dramatically reduce the amount of time spent developing alternative materials or helping students who have trouble with reading and writing. For example, students can use UDL to enlarge print, have materials read to them, or even dictate test answers.

**Virtual Schools.** In a study commissioned by WestEd, it was estimated that 40,000 to 50,000 students were enrolled in online courses in 2001–2002 and at least 14 states have sanctioned online “virtual schools.” Many of these are privately-operated charter schools, some of which provide support for home schooling. While virtual schools began at the secondary level, a number are now operating at the elementary level as well, supplementing instruction mostly in rural and small schools (Clark 2001).

**Technology for Special Populations**

In addressing the digital divide, schools face a critical need to provide full access for special student populations—especially those with disabilities—to the Internet, distance learning, and multimedia materials. Some resources are now available in the form of specially designed assistive technologies. In fact, a software program that substitutes voice commands for a keyboard—originally designed to assist persons with hand impairments, such as carpal tunnel syndrome—has already proven to be a tremendous
tool for students who have difficulty learning to use keyboards (Rutter 2001). It has been suggested that future voice-input technology may increase a student’s level of productivity three to four times faster than using keyboards.

**Spend Wisely**

Some of the technology solutions to the digital divide are costly and will require additional funding. However, many useful low-cost technologies are available and schools need to consider them when evaluating and ordering new technology products.

While adequate funding is essential in closing the digital divide, funding spent unwisely will not advance student education or teacher instruction. Decisions regarding the purchase of technologies should be integrated within a plan that has been developed with adequate consideration of educational, technological, and societal trends. Solutions to the digital divide must address the different but critical needs of students in poverty, those for whom English is a second language, and others with disabilities that deny them access to classroom technologies. These concerns require that schools have someone on staff—perhaps a technology specialist—stay informed and up-to-date about technologies that will facilitate learning for special populations, and that teachers receive sufficient training in the use of these technologies.

In addition, some “behind-the-scenes” support is needed to ensure that all students can access the Internet. For example, students with special needs can benefit from features such as Web trackers, which allow them to make their own decisions about font size, color, and other UDL features. Personalized features that students use with their computers stay “turned on” when students are on the Internet or participating in distance learning.

This type of “behind-the-scenes” support is available from ADA & IT Technical Assistance Centers at www.adata.org. These centers can help schools with technology planning and purchasing decisions, as well as technology implementation.

**Principals Can Help**

Solutions to technology inequities ultimately rest with principals in their role as instructional leaders. Their experience and wisdom will be tested over the next few years as they strive to narrow the digital divide by imple-

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menting policies based on fairness and consideration for groups that are technologically disenfranchised. Addressing the digital divide is a small step that could make an enormous difference in educational equity for the nation’s children.

References

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WEB RESOURCES
The Kaiser Family Foundation provides the full text of its recent report, “Children, the Digital Divide, and Federal Policy,” which reviews research findings and information on technology access. www.kff.org/entmedia/entmedia091604pkg.cfm

The Digital Divide Network highlights current research on many forms of the digital divide. www.digitaldivide.net

The National Telecommunications and Information Administration offers a series of reports, “Falling Through the Net,” exploring the impact of the digital divide on various population groups. www.ntia.doc.gov/ntiahome/digitaldivide/
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