From District to Desktop: Making the Most of Broadband in Schools

A White Paper
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Internet use has increased dramatically in schools since the adoption of the federal E-rate connectivity assistance program more than 10 years ago. The upswing in demand is not surprising since infusing robust broadband throughout the learning process has garnered some impressive results:

- Improved student achievement, attendance, and graduation rates, and decreased dropout rates;
- Gains on high-stakes tests that enable schools to meet AYP (Adequate Yearly Progress) and performance benchmarks
- Heightened school efficiency, productivity, and decision making;
- Advances in teachers meeting requirements;
- Improved student learning skills;
- Assistance in meeting the needs of all students, including those with special needs;
- Promotion of equity and access;
- Improved workforce skills; and
- Increased parent involvement

If all students are to realize these outcomes, equitable high-speed Internet and broadband access is critical.

Broadband Connectivity is Important for Schools
For Americans to engage in a global information society, it is critical that they have access to high-speed, high-bandwidth Internet, meaning broadband. In many communities, public libraries and schools provide the only free public Internet and computer access to millions of Americans.

For public schools to remain vital community Internet access points, they all need to be connected to high-speed broadband (at least 100 Mbps). In fact, representatives from the National Telecommunications and Information Administration (NTIA) have stated that public schools and libraries have a critical role to fill in Internet access. In addition to providing free public access to computers and the Internet, schools can serve as anchor tenants on broadband networks, providing the impetus for Internet service providers (ISPs) to build networks into American communities. Indeed, studies have demonstrated the symbiotic relationship between home and school Internet access: a fast connection at home raises the demand for more bandwidth at school and vice versa. Once a local school has gained access to higher connectivity speeds and greater bandwidth, that access infrastructure also has been brought into the community where last-mile connections can expand this high-speed Internet into private homes and businesses.
Insufficient Broadband Impacts Learning Environments

Issue 1: Students need high-speed broadband access in their schools to take advantage of a wide range of new and rich educational tools and resources available for anytime, anywhere learning.

Innovative learning technologies have become more diverse and more bandwidth intensive. Activities such as podcasting, media streaming, and videoconferencing require a robust network.

Issue 2. Teachers need high-speed broadband access for professional development, and engaging in professional learning communities as well as accessing new educational resources such as curriculum cadres and education portals.

Ensuring that children have access to high-speed connectivity in school is merely a part of improving their learning experiences. Educators who have the up-to-date content knowledge and pedagogical strategies necessary to create an equitable learning environment for all children must facilitate these experiences.

A substantial body of research conducted across the country has demonstrated that when teachers are not comfortable integrating new techniques and tools in their practice, they tend to avoid embracing innovation.

Therefore, it is essential that any strategy to increase connectivity in schools contain a component to ensure that teachers have access to professional learning opportunities. There are teacher resources such as education portals that deliver courses and provide discussion forums for educators, virtual conferences that are free for educators interested in integrating emerging technologies into classroom practice, and virtual worlds.

School librarians have leadership roles as teacher, instructional partner, resource specialist and program leader as they pertain to four areas of broadband implementation in schools.

- Access - promote awareness of Web 2.0 and other broadband-enabled applications; correlate physical and digital resources.
- Skill – design professional development using latest research about professional development for technology; co-teach aspects of revamped lesson that include digital resources, broadband applications, and 21st Century Skills.
- Policy – educate students and teachers on capacity limitations, copyright and safety implications of broadband applications; perform ongoing measurements of policy impact and adjust on an ongoing basis.
- Motivation – share co-teaching successes with digital resources and broadband applications with other teachers; facilitate an online community for student learners to share ideas and projects.

Issue 3. Administrators need high-speed broadband access to conduct online assessments and to access data for effective decision making.
Even the most excited and engaged children and innovative and technology-savvy teachers cannot change the bandwidth environments in their schools. Administrators must see the need to invest in high-speed connectivity. In addition to facilitating a climate of constant professional improvement, district and building-level administrators must monitor student achievement and ensure that students are assessed in a timely and accurate fashion.

Issue 4. Students need high-speed broadband access to overcome the digital divide in rural and low socio-economic areas.

Rural areas are hit hardest by a lack of connectivity, and this rural-to-urban variation has perpetuated a digital divide that once fell solely along economic lines. Increasingly, learning with technology has gone beyond mastering curriculum into real life opportunities like job application, college enrollment, and driver’s training. Moreover, bandwidth is a key aspect of parental involvement as many schools have created networks for information distribution through the use of email lists, broadcast messages, and blogs. It is commonplace to access school websites featuring newsletters, calendars, lunch menus, and school and faculty contact information. All of this information serves to keep schools in touch with the communities they serve.

**Going the Last Mile for Broadband in Schools**

A solution to these situations is on-site support to streamline and enable effective use of broadband-enabled technology. For most schools, the school librarian can expertly direct this “last mile” implementation in broadband access, skill, policy, and motivation.

In their roles as school leaders, school librarians provide the technology coordination, support, and leadership necessary to address access issues from desktop to district. As one of the only faculty members who works across curriculum areas and grade levels, the school librarian has unique knowledge of classroom activities throughout the schools and places in which technology would enhance learning. Moreover, it is the school librarian who often provides desktop-level technology support and liaises with district-level technology staff to identify the needs of teachers and students.

The school librarian role encompasses integrating technology into the teaching and learning process for both teachers and students. School librarians develop and facilitate professional development with technology equipment and instructional resources to help teachers make the best use of the district’s investments in these areas. The school librarian also uses the principles of *Standards for the 21st Century Student Learner* to help teachers bring new technology, interdisciplinary skills, and learning resources to students through class instruction and one-on-one learning. Such standards highlight the importance of integrating technology within schools and reinforce the institutional roles played by school librarians at the K-12 level in facilitating high levels of overall student educational achievement. Students see the school library as a digitally enriched place where information can be located and used, projects can be designed and created, and knowledge can be expressed within and beyond school walls. The school librarian is often the guide to these technology-mediated experiences and ensures that students are learning essential skills and dispositions of 21st century learners.
Because the school librarian sees the use of technology and connectivity at both the desktop and district levels and has knowledge of not only the issues inherent in instructional integration but also technology infrastructure, this person is in a unique position to anticipate and articulate needs for policy creation and revision. Experienced in developing policies for the school library program, the school librarian is knowledgeable about ensuring equal and safe access to learning for all members of the school community in policies that support the district’s mission and goals.

Finally, because school librarians connect work across grades and subjects, they have the ability to help students and teachers make interdisciplinary connections that increase the relevance of classroom content. They also have the resources, technology, and knowledge to ensure that learning is appropriately infused with inspiring techniques and ideas that motivate learning and teaching. School librarians know when simulations or other learning objects may be able to express a concept in a more interesting or direct fashion and engage student interest. School librarians also know when the creation of a digital video, podcast, or mash-up might illustrate student learning in a way that will be exciting to create and compelling to experience. School librarians are very involved in supporting effective use of broadband in all areas in all of their roles to education stakeholders.

Concluding Thoughts and Recommendations
Network connectivity opens up a wealth of possibilities to K-12 educators. While it has the potential to result in fundamental changes in teaching methods, it can definitely be used to enhance already effective teaching methods.

However, schools must have confidence in their network infrastructure before network connectivity will be integrated into the classroom. Networks must be reliable and quick; and, if they do not function, as expected and technical support is not readily available, then educators will not use them. Last mile support is essential and all stakeholders must work together to address the main issues facing the improvement of broadband in schools. Some possible approaches by researchers, school librarians, teachers, administrators and students for addressing the main issues facing broadband in schools include:

- Develop a Return-on-Investment (ROI) calculator so that administrators can easily see the benefits of broadband investment.
- Assemble an advisory panel of “last mile” personnel including school librarians, school administrators, and technology personnel to interface with educational technology policymakers.
- Undertake a vigorous and thorough measurement of current bandwidth capacities and applications at the classroom level.
- Collect quantitative and qualitative data about the impact of broadband on student learning.
- Survey educators about their skills and needs for broadband.
- Select exemplar schools for in-depth professional development, classroom support, and student achievement study.
Schools face challenges to the integration of broadband in teaching and learning in the areas of access, skills, policy, and motivation. While it is possible for a school to be connectivity-rich but integration-poor; conversely a school can experience the thwarting effect of inadequate connectivity on instructional innovation. School librarians have a vital role to play in helping broadband and school technology work together to maximize teaching and learning.

References


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