

INTER



NET



and

School Libraries

THE TIME IS NOW (MORE THAN EVER)

by James Werle and Louis Fox

Internet2. What does this word mean to you? Maybe it conjures images of a mythical realm off-limits to the masses of web-surfing plebeians. A forbidding place where computer engineers and the academic research elite speak in esoteric computer programming dialects and move terabytes of data through big pipes at the speed of light.

To Chad Lehman, a library media specialist at Horace Mann Elementary School in West Allis, Wis., Internet2 is helping transform the school library into the heart of digitally enabled innovation and learning in his school. As we shall see, Chad's story is one that is being repeated in thousands of K–20 institutions across the country.

So what is Internet2, and why does it matter to K–12 schools and libraries? To answer these questions, let's start at the beginning.

A LITTLE BACKGROUND

The internet we all use on a daily basis, sometimes referred to by the technology community as a “thirty-year overnight success,” has its roots in the 1960s as the special-interest projects of a small band of university-based computer scientists and researchers. In the decades that followed, the internet's growth rate was relatively slow and largely confined to this academic research environment.

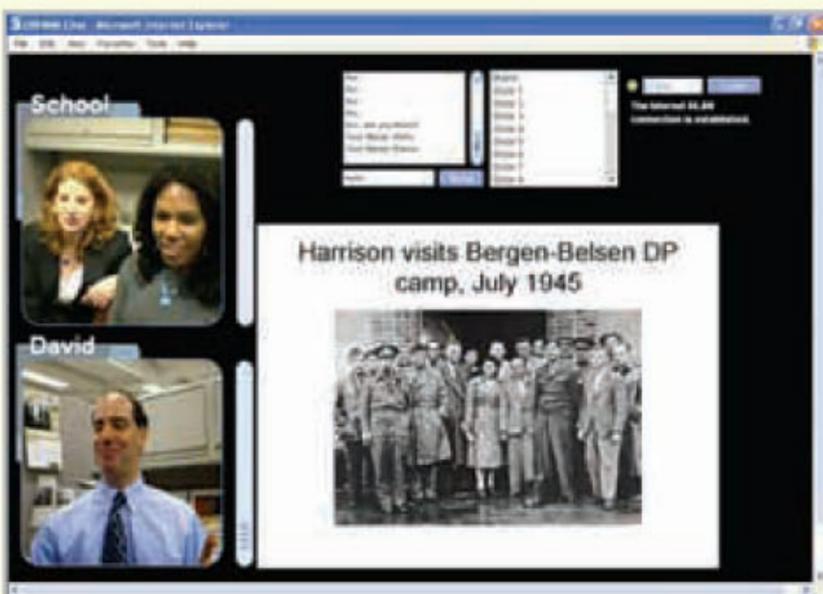




Internet2 opens up a world of international classroom collaboration opportunities.



Internet2 enables access to experiences and expertise that are difficult to achieve over the commodity internet.



Students connecting with an expert from the U.S. Holocaust Memorial Museum



K-12 students can access remote instruments over the Internet2 advanced network.

In the late 1990s, animated by the National Science Foundation (NSF) and the National Science Foundation Network's (NSFNET) "privatization" efforts, the creation of the World Wide Web, and the Mosaic web browser, the internet grew exponentially in every direction, all at once. It became a boundless global community with 1.5 billion users worldwide, countless commercial ventures, and, more recently, an explosion of images, video, audio, and other streaming data flows. Today's internet—the commodity or commercial internet—has recognized a number of limitations including security and authentication problems, IP routing bottlenecks, "quality of service" performance issues, IP address shortages due to the growing proliferation of mobile devices, and the unquenchable thirst for more bandwidth. All of this left the internet's creators and original inhabitants—the research and education community—in need of a new and even greater online environment purpose-built to support discovery, learning, and understanding.

In 1996, the research and education community created Internet2, a not-for-profit advanced networking consortium. Internet2 also refers to the dynamic, innovative, and cost-effective 100 gigabit hybrid optical and packet network run by the consortium. Today, Internet2 consists of more than 200 U.S. universities in cooperation with 70 leading corporations, 45 government agencies, laboratories, and other institutions of higher learning as well as more than 50 international partner organizations.

Additionally, in 2001, the Internet2 consortium launched the Internet2 K20 Initiative to extend network access to K-12 schools, public libraries, baccalaureate colleges and universities, community colleges, and a host of cultural organizations such as museums, science centers, zoos, aquariums, and performing arts centers. The K20 Initiative connects numerous state and regional research and education networks to the Internet2 national backbone network.

Today, more than 60,000 K-20 organizations (K-12 schools, public libraries, etc.) are connected to the Internet2 network across 38 states. See the map of the state education networks connected to Internet2. Because the Internet2 network peers with other advanced networking efforts internationally, what has been created is a sort of global education network enabling unprecedented levels of collaboration across all education sectors, both within the U.S. and around the world. Internet2 also serves as a "test bed" where new advanced network applications and technologies can incubate and evolve. In some cases, these innovations become part of the commercial internet.



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WHAT IS POSSIBLE?

So now that you have a better understanding of Internet2, let's explore a few of the implications for the K–20 community. While there are many individual K–20 projects, applications, and resources available across Internet2, it is helpful to understand the following recurrent usage motifs that have emerged over the years. These opportunities are the direct result of coupling Internet2's world-class advanced network with innovators from colleges and universities, K–12 schools, libraries, museums, and other educational institutions. Below is a list of recent exemplar projects and resources for each usage motif.

- Access to rich multimedia digital collections: Enabling the delivery of HD-quality video and CD-quality audio, high-resolution images, and other multimedia content.

NJVid—A statewide video-on-demand repository (www.wpunj.edu/njvid/about/default.html)

- Experiences and expertise: Enabling students to be scientists, not just study science; to be historians, not to merely study history; to participate in a dialogue with experts; and to visit places that would otherwise be inaccessible

Total Solar Eclipse: Live from China (<http://k20.internet2.edu/projects/101>)

Robert Ballard: 50 Years Exploring Deep Waters (www.npr.org/templates/story/story.php?storyId=106246285)

- Creating new knowledge: Enabling participation in large-scale scientific projects and cultural events

NEPTUNE (www.neptune.washington.edu/education/index.jsp?keywords=EDUCTN&title=Overview)

- International learning communities: Allowing students to explore what it means to live in an ever-increasing interrelated global community

Megaconference Jr. (www.megaconferencejr.org)

For additional examples of how Internet2 is being used in K–12 schools, please see Erika Miller's excellent articles, "Internet2, K–12, and Librarians" (*MultiMedia & Internet@Schools*, Vol. 13, No. 5, September/October 2006) and "Internet2 and K–12—New Resources and Opportunities" (*MultiMedia & Internet@Schools*, Vol. 15, No. 6, November/December 2008).

ADDRESSING THE LAST-MILE PROBLEM

Undoubtedly, advanced networking applications aid educators in creating a rich, interactive learning environment for students of all ages. However, without adequate local connections to the network, the benefits of advanced networking will largely be unrealized for the majority of individual organizations. The choke points are no longer on the national backbone, nor are they at the state networking level: They are most often at the local education loop or individual institution.

By investing in an upgraded local infrastructure, schools, colleges, museums, and libraries can begin to take full advantage of the myriad resources already in place and available to them. President Obama appears to understand this important issue. While declaring his candidacy on the steps of the Old State Capital in Springfield, Ill., on a cold February day in 2007, Obama called for our nation to "lay down broadband lines through the heart of inner cities and rural towns all across America." (See http://change.gov/agenda/technology_agenda.) Since then, the American Recovery and Reinvestment Act of 2009 was signed into law on Feb. 17, 2009, appropriating \$7.2 billion to "expand broadband access to unserved and underserved communities across the U.S." (see www.ed.gov/policy/gen/leg/recovery/index.html) with \$1.2 billion in grant funds

What makes Internet2 potentially transformative across K–20 education is the people network and the opportunities for innovation it enables. Toward that end, the K20 Initiative launched a social networking website called Muse.

to address the “last mile” problems in our K–12 schools. (See www.newamerica.net/files/Broadband%20Infrastructure%20Application%20Guide%20for%20BIP.pdf.) While these efforts will not solve the K–12 bandwidth problem, they should be recognized as an important step forward.

ROLE OF SCHOOL LIBRARIANS

Traditionally, school librarians have added value to their schools by evaluating and selecting largely print resources that meet the information needs of our teachers and students, building systems to store and retrieve these resources, serving as reading advocates by providing reader’s advisory services, and providing curriculum-centered information literacy teaching so our students and teachers can find, evaluate, and use what they are looking for. One of the challenges school librarians face is how to redefine and expand our value-added role in the school now that the sources and formats of the resources our population seeks are largely digital and networked.

As schools continue to move from textbooks to resource-based learning, we believe Internet2 can be a part of the solution by providing opportunities for school librarians to develop and curate collections of engaging advance network-enabled digital learning opportunities and experiences that will engage even the most discerning tech-enlightened students. School librarians are uniquely qualified and positioned to serve as school liaisons to the world of experiences and expertise Internet2 enables by making it easy for teachers to discover and integrate these resources into their lesson plans and course curriculum.

In the era of big budget cuts, assembling a collection of Internet2-enabled teaching and learning resources can help your school library become protected “critical habitat” in the school’s learning ecosystem.

FIND YOUR MUSE

Internet2 isn’t just about big pipes or the teaching and learning applications that take advantage of its leading-edge advanced-networking capacity. What makes Internet2 potentially transformative across K–20 education is the people network and the opportunities for innovation it enables. Toward that end, the



The social networking site Muse

K20 Initiative launched a social networking website called Muse (<http://k20.internet2.edu>) in mid-2008. The goal of the site is to help school library media specialists and other K–20 practitioners find people and resources that support and enhance their schools teaching and learning objectives.

Kathy Kraemer, district technology integration coordinator for Fridley Public School in Minnesota, agrees that Muse is already greatly assisting her district’s efforts regionally; she expects adoption to grow. “In Minnesota, there are many groups working on a variety of Internet2 applications. With Muse, we’ve become more aware of other schools and organizations working on similar projects and are finding better ways to work together,” says Kraemer. “It does an amazing job of cross-promoting organizations, projects, and people involved in Internet2.”

For media specialist Lehman, Internet2 is as much a network of innovators as an advanced education network. He looks to the Internet2 K–20 community for equal measures of inspiration and practical technical advice on how to make innovative projects work in the library and the classroom. We invite you to join this forward-looking community of formal and informal educators who are helping to develop the revolutionary digital content, services, and learning opportunities that will continue to define and shape the future of the internet, schools, libraries, and learning.

James Werle holds a library media certificate and received his M.L.I.S. from the University of Washington’s Information School in 2001. James currently works as a technology project manager at the University of Washington. Contact him at jamesawerle@gmail.com.

Louis Fox has served as the director of the Internet2 K20 Initiative since its inception. He also serves as senior advisor, global information technology, Duke University, and vice president, technology and innovation, Western Interstate Commission for Higher Education. Contact him at lfox@internet2.edu. ■