The National Science Digital Library
Building a Digital Library, Building Community

A group of eager dot-commers crowd around a computer monitor, watching sales build, one user at a time, as a newborn company website creeps onto the information superhighway. This television advertising scene underscores the need for infrastructure to support web sales.

At the opposite end of the e-commerce spectrum, the goal of the National Science Digital Library (NSDL) is to enhance science, technology, engineering, and mathematics (STEM) education through online technology. People’s “experiences” with the NSDL, not their “online purchases,” will point the way toward the development of a fabric for joining and multiplying the impact of NSDL, which focuses on technical infrastructure and community networking. Outreach activities for what will become the largest heterogeneous public digital library in a post-dot-com world has turned the question, “If we build it, who will come,” into “If we don’t build it with them, will they ever come?”

The NSDL community of practice consists of large, discipline-diverse, and decentralized user groups made up of collaborative communities who create, aggregate, and contribute digital resources to the NSDL. NSDL Core Integration (Cornell University, Columbia University, and University Corporation for Atmospheric Research) provides “wholesale” services to NSDL collaborator communities who may “retail” those services through their own portals that are packaged with additional content selected to meet their specialized users’ needs.

Making science accessible to nonscientists is at the heart of any science outreach program. The NSDL specifically hopes to attract the attention and participation of users who are at multiple levels of science understanding, have limited time, and have a great need for online science resources—educators, students, and parents.

NSDL Core Integration has developed a series of activities and materials that are designed to include the NSDL community in the process of building the library. These activities also aim to involve legislators, publishers, educators, students, parents, digital collection builders, librarians, and learned societies in the National Science Digital Library Program.

Tools of the Trade
Using a multiple-storied glass tower representing the NSDL, users navigate through different “floors” to find information tailored to educators, librarians, learners, or partners. On the “Educators” floor, visitors participate in a demonstration search for learning materials related to the human eye. Lesson plans, multimedia objects, and science news items are available, and include explanations about how the materials would be useful in a classroom. This animation is a glimpse into the NSDL of the future. As part of the first NSDL brochure and online tour released in 2002, it gave NSDL stakeholders a look at user scenarios, illustrating “a vision of what NSDL will be.” The tour is available on CD and online at http://nsdl.org > “About NSDL.”

The 2002 introductory brochure, followed by a companion brochure aimed at K-12 educators in 2003, were distributed at digital library, education, and discipline conferences and meetings, as well as to legislators and government agencies. The NSDL Outreach Group, comprised of NSDL Core Integration representatives, is developing a database of “Conferences” and “Partners” to target distribution of NSDL information, which includes invited paper and poster presentations on research topics, information booths at events, and distribution of a variety of printed and online materials.

NSDL promotional materials were distributed recently at the National Science Teachers Association Conference exhibit hall. Materials included the first in a series of NSDL Sampler CD-ROMs: Volume 1: Earth’s Atmosphere, produced in cooperation with the Eisenhower National Clearinghouse (ENC). It features the Atmospheric Visualization Collection from Argonne National Laboratory. NSDL brochures and CDs were also distributed at the National Council of Teachers of Mathematics Conference in April 2003. At both events, teachers, educational service providers, and researchers, previously unfamiliar with NSDL, were overwhelmingly positive about the potential of the Library to be a significant resource for teachers and students.

The first NSDL Annual Report, entitled "The NSDL Launch Report" will be published this summer. This comprehensive overview of NSDL history, background, community governance structure, and usage data will be the premiere benchmark report on NSDL growth and current status.

Hands-on User Testing
User testing of nsdl.org began in August 2002. Teachers, high school and college students, professors, and parents participated in structured walk-throughs and user studies in the Usability Lab at Cornell’s Computing and Information Science program and various other locations throughout the country. This data provided a framework for involving potential users in improving NSDL, and initiated the ongoing process of user-centered iterative design.

Online Presence
As part of the refinement to existing system components at nsdl.org, “News” and “Exhibits” will be given greater prominence to support increased outreach efforts. A new integrated collaborative environment will be selected to replace the current communications portal.
The current development cycle of NSDL Core Integration teams focuses on investigations into establishing an environment where end users can be contributors. The aim is to encourage the development of communities of practice and knowledge sharing. A key factor in “wholesaling information to retailers” is to offer core services that give other services, agents, and users the opportunity to build on a broad base of information and to expose characterizations of resources and discipline-specific aggregations to portals and end users. The usefulness of a resource for an individual user will be determined by a number of factors; among them might be access to a collaborative evaluation and selection process both as a consumer and a contributor.

In-House Publishing
Staying in touch is particularly important to NSDL partners and collaborators. To meet this need, the NSDL program publishes the NSDL Whiteboard Report each month. This e-mail and online newsletter features research news and notes from NSDL projects nationwide. In the NSDL Pilot Evaluation Study conducted last year, 42.5 percent of users surveyed reported that they read Whiteboard Report each month—30.8 percent read it several times a month. Whiteboard Report allows projects to distribute news of their accomplishments and ongoing work to a wide audience and promotes regular communication with the external research community.

Media Mentions
nsdl.org was launched in Washington, D.C., on December 2, 2002, at a public ceremony held at NSDL’s Annual Meeting. Susan Roth, Gannett Washington News Bureau, filed a Gannett wire service story about the new National Science Digital Library on New Year's Day causing a usage spike at nsdl.org. Although there is no such thing as bad publicity, the story coincided with bad weather and power outages in the Northeast and provided the new library with a load test challenge. The article appeared in newspapers and media outlets around the country, eventually causing nsdl.org to be "slashdotted" at slashdot.org (News for Nerds, Stuff that Matters) generating more than 60 comments in one day. Enthusiastic visitors and acts of nature did not affect performance at http://nsdl.org where the http connection rate soared to 337 per minute in early January.

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For more information:

http://nsdl.org

The current issue of The Whiteboard Report is available at http://whiteboard.comm.nsdlib.org
Users see results from a simulated search of the library.

Search results return a variety of media formats including text, lesson plans, and images.

Currently, users may search the library from the main page at nsdl.org or browse exhibits of interest.

NSDL exhibits include selected items of interest much like the glass library cases found in traditional libraries.

Users enter the animated tour of the library through the lobby on the main floor of the transparent "metadata tower" representation.