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Untangling the Web: The National Digital Libraries Initiative

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News from Online: Untangling the Web: The National Digital Libraries Initiative

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News from Online: Untangling the Web—
The National Digital Libraries Initiative

by Dean H. Johnston

If the collection of materials found at your local library was as disorganized and chaotic as the World Wide Web, it would resemble random piles of information of varying quality on an unimaginable range of topics strewn about a very large room—actually, more like a warehouse. To facilitate access to the vast resources of the Internet, the National Science Foundation has created the *Digital Libraries Initiative* (on the Web at <http://www.dli2.nsf.gov/>), now in Phase Two, and the resulting *National Science Digital Library* at <http://www.nsdlib.org>. These are just two aspects of a broad approach to create the next generation of Web-based resources for science educators and students at all levels.



At this point in the evolution of the Web, two types of tools allow one to find useful Web sites for use in the classroom. High-speed search engines such as *Google* (<http://www.google.com>), while indexing nearly all pages on the Internet, only work well if the topic of interest can be described by a small set of unique keywords. Returning to the disorganized library analogy, a search engine corresponds to a searchable list of all the text of all the books, CDs, and videotapes in the collection but with no control over keywords and no real way to limit the search. In addition to search engines, the compilation of links organized by dedicated individuals and organizations such as *JCE* provide an indispensable tool in identifying appropriate material for the classroom. These individual "bookshelves", however, are limited in that they are highly dependent on the specific interests and diligence of the person maintaining the list. Some clear favorites that receive frequent mention in this column include: Stephen Lower's *Instructional Resources for Chemistry* (<http://www.sfu.ca/chemed>), the *Sheffield Chemdex* (<http://www.chemdex.org>), and the many resources that can be found at *JCE Online*.

Several sites have come online recently that index and catalog materials in a way similar to a library, providing additional information about each site. The well-organized *MERLOT* site at <http://www.merlot.org> contains thousands of links to material in all areas from the arts to business to science and technology. The list of peer-reviews with rankings proves most useful in that I was able to quickly find a number of interesting, high-quality sites by simply browsing down the list of reviewed sites. Unfortunately the approximately 200 chemistry listings are not further subcategorized, and only a small number (less than ten percent) have been peer reviewed to date.



Another intriguing site that has been funded by the NSF Digital Libraries Initiative is the *iLumina* Web site at <http://www.ilumina-dlib.org> based at the University of North Carolina at Wilmington. This site catalogs a variety of materials specifically for education in science, mathematics, technology, and engineering. The detailed indexing of materials and advanced search tools make this site quite promising, although the limited amount of chemistry-related materials severely restricts its usefulness. The official National Science Digital Library Web site at <http://www.nsdlib.org> launched in December 2002 has the potential to become a one-stop site for a wide range of educational science material. The advanced search tools are detailed, but at this early time the site suffers from a lack of content. Clearly as more digital library collections come online, this will become an invaluable tool for science educators at all levels. A more mature and specialized example that realizes the potential of such a site—albeit on a more focused topic—can be found at the *Digital Library for Earth System Education*, <http://www.dlese.org>.

Several additional projects have been funded through the NSF Digital Libraries program, including the recently funded

- Digital Libraries Initiative
<http://www.dli2.nsf.gov/>
- National Science Digital Library
<http://www.nsdlib.org>
- Google
<http://www.google.com>
- Instructional Resources for Chemistry
<http://www.sfu.ca/chemed>
- Sheffield Chemdex
<http://www.chemdex.org>
- MERLOT
<http://www.merlot.org>
- iLumina
<http://www.ilumina-dlib.org>
- Digital Library for Earth System Education
<http://www.dlese.org>
- Reciprocal Net
<http://www.reciprocalnet.org>
- American Mineralogist Crystal Structure Database
<http://www.geo.arizona.edu/AMS/amcsd.php>

Access date for all sites is May 2003.

Reports from Other Journals

project at the *Journal of Chemical Education* to collect digitized chemical demonstrations, materials for computer algebra systems, Web-deliverable classroom items, and Web-based student assessment materials. (As the *JCE* Digital Library progresses, reports will appear in these pages.) More specialized collections already online include the *Reciprocal Net* site at <http://www.reciprocalnet.org> that contains an extensive array of crystallography data and tutorials, and the *American Mineralogist Crystal Structure Database* at <http://www.geo.arizona.edu/AMS/amcsd.php>, which contains a searchable database of mineral crystal structures.

The National Science Foundation clearly realizes the significance of digital resources to the future of science educa-

tion in this country. The development and enhancement of these digital libraries will rely on three factors: high-quality content organized and indexed in an efficient manner; new technologies to enhance searching, browsing, and sharing of information; and human effort in the form of peer review to bring the best material to the forefront. As these efforts continue, the random piles of information will be shelved, thus allowing students and educators in all areas to benefit from new resources.

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