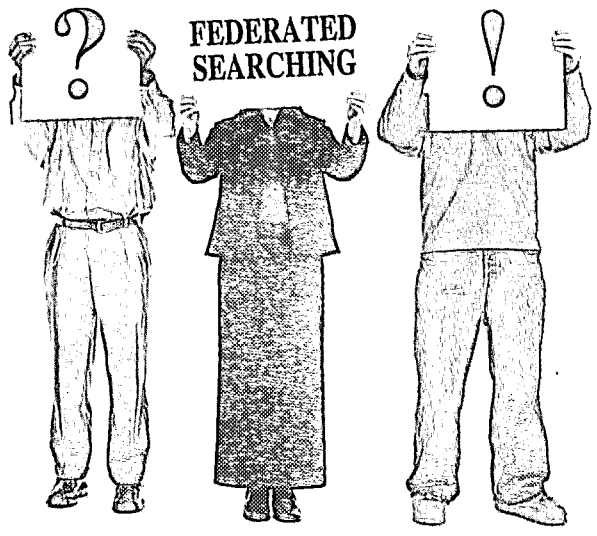
Federated Searching: A Viable Alternative to Web Surfing!



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WHEN conducting research or seeking information, students and teachers often use the Internet search engine Google. I frequently hear library media specialists in my classes bemoan the seemingly unending struggle to entice students and teachers to use the subscription databases, the library catalog, and the selected Internet Web sites available through library media centers and the technology departments in their school districts. Google and other Internet search engines are not inherently bad; however, other sources can be more effective for student searching.

A possible solution to the Google-only research approach is making its way into schools via library media center automation systems. Imagine searching your local library media center and other library collections, Web sites, and subscription databases with a single click of the mouse. This is exactly what federated search technology can provide to library media center users. Dynix/Horizon, Follett, Sagebrush, and Sirsi currently offer federated search or portal add-ons to go with their automation systems. Scheduled releases in 2004 are Alexandria's SearchAll and Mandarin's Enhanced Web OPAC portals. Other automation systems used by schools are developing or have released federated search technology. For this article, I have chosen to explore six that, in my school experience, are the most common (see Table 1).

What Is Federated Search Technology?

Terminology found in current library automation literature associated with single-search interface technology includes the following:

- broadcast searching
- consolidated searching
- cross-database searching
- distributed searching
- integrated searching
- metasearch searching
- portal searching
- federated searching

Within the world of computer technologists, these terms have meanings that differentiate one technology from another. When referenced for library automation systems, these terms imply the ability to search multiple databases through a system's interface. Federated searching in this sense primarily utilizes the Z39.50 protocol in order to search local and remote databases. Paul Miller, in his 1999 article about Z39.50, states, "[federated searching] is designed to enable communication between computer systems such as those used to manage library catalogues." Some vendors are working at adding XML (eXtensible Markup Language) to Z39.50 in order to take advantage of existing Web clients, protocols, and tools. Dorman (2003) explains, in easy-to-understand language, the work being done in this area. As it is a technology in its infancy, library media specialists and technology coordinators should see rapid improvements to federated searching as it exists today.

TABLE III

Common School Automation Systems

Company	Search Program Name	URL
Alexandria	SearchAll	http://www.goalexandria.com/
Dynix/Horizon	Horizon Information Portal Consolidated Searching	http://www.dynix.com/
Follett	Find-It-All (One Search)	http://www.fsc.follett.com/
Mandarin	Enhanced Web OPAC portal	http://www.mlasolutions.com/
Sagebrush	Pinpoint	http://www.sagebrushcorp.com/
Sirsi UnicornEcole Only for Unicorn clients or migrations from DRA	Sirsi Rooms, Sirsi SingleSearch and/or Sirsi Resolver	http://www.sirsi.com

The Good

Virginia Vance, school media specialist in Liberty Hill, Texas, says, "The students who have started to use [Follett's] Find-It-All, particularly at the middle school level, continue to use it because it allows them to look at a variety of sources with one search and excludes the commercial sites and advertisements they often find with the free searching they have done in the past." Federated searching provides users a single "front-end" application from which to conduct their electronic information search and retrieval needs. This reduces the time spent, encourages students to search more deeply, and has the prospect of facilitating better results.

Some vendors' products provide group search results by the source from which they were retrieved. This helps students identify the most reliable source information first. Most vendors allow the user to customize their search using check boxes, drop-down windows, and a choice of search strategies. Customized searches allow a wide variety of selection.

Alexandria's SearchAll allows the user to select from the following options before searching:

- Enriched Results — Yes or No
- Deduplication by: — Title, URL, Host
- Results per source/ Results per page: — Both in increments of 10, 25, 50, 100
- Sorting by: — None, relevance, title, author, author & title, date, retrieved order, source
- Sorting type — Ascending or descending
- Limiting — Language or material type
- Results display — Full, brief, or one line

A library's collection of resources is selected by the user activating a button. Each result is numbered with a check box for selecting. Source, title, and description are given for each result. Selected results may be e-mailed, sent to a workspace, or kept as a results set. Results can be filtered by selecting Display level, Deduplication, Sorting, and Filtering out by word or phrase. These filtering options use the same options as those listed in the bulleted display above.

Sagebrush's Pinpoint uses drop-down menus to select the type of research material being looked for (Special Mix, Library Items, Reference Facts, Article Pages, News and Reports, Biographies, and Lesson plans) and the grade levels (Elementary, Middle/Jr. High, High School, Adult). Each choice brings the user a different set of resources from which to select. The different resource selections can be altered using a clickable button labeled "View Search Sources." Actual searching is done using either "Quick Search," which allows word or phrase searching, or "Advanced Search," which provides Boolean searching with three words or terms with options for "AND, OR, and NOT." Results are grouped by source type with source name following each citation. The "ADD" button moves selected results to a personal search page called "My Information." At this page, the user may sort by title, call number, author, and publication date. Items may also be deleted, printed, or added to "My Clippings," which is a temporary storage location within Pinpoint. Items in "My Clippings" must be saved to another location before ending the research session or they will be deleted. Pinpoint also provides "Jump to" buttons that allow the users to move within the results to view items from various resources such as subscription databases, Web site, and library catalog items.

The Bad

As with all technology, users need training. I was able to operate successfully in the federated search applications I explored; the Help menus were a valuable resource in understanding the more subtle features. Students and teachers need to be taught how to identify the results that best meet their needs. These applications are complex enough to raise questions about which elementary grade levels would most appropriately use the applications successfully. Setting defaults that could not be altered may be very desirable for elementary students. A personal preference, one echoed by my own children, is to make all the selecting and limiting features accessible from one page.

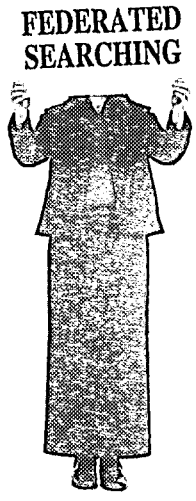
In their two articles, Hane (2003) and Tennant (2003) discuss a variety of potential problems with federated searching. Of these, the end user is potentially most

concerned with search results, de-duping, and relevancy. Federated searching may not be better than searching a database by its native search utility. Wide variances in database search capabilities may limit the success of any search. The federated search technology translates a user's search into something a database can understand. If the database is limited as to how it can be searched, the federated search may only be able to pass on part of the user's search terms.

The relevancy of the search results is also difficult to determine. Federated search technology is limited to an analysis of database citations, while the database's own search engine has access to the full text or abstract data. The degree to which this is a potential problem is not easy to determine. Certainly, searches that return large numbers of unusable results will not impress users.

Along with questions about relevance comes the problem of duplicate responses. The de-dupe capability of any search engine is highly suspect because of the lengthy process of comparing results from multiple databases. Be sure to not only ask but also test the relevancy and de-duping capabilities before you purchase.

As relevancy and de-duping become more sophisticated, the problem of too many results will be reduced. Many students will only look at the first few returned results before moving on to something else; they want fast, easy results.



The Ugly

Getting the federated system working within the technology restraints of a school district may challenge district technology staff and vendors. Lincoln, Nebraska, library media services director Donna Ewoldt discussed with me the problems of working with firewalls, rotating IP addresses, and cache servers, which were delaying their implantation of the technology. Adding a federated search technology must be a team effort and the identification of potential.

Another problem to be solved before implementing federated search technology is that of authentication of users. Ideally, every library user should be able to access electronic resources from the school and from home or any other location. Library media specialists have worked with subscription database providers to create access that is as seamless as possible. Students and teachers do not want to manage multiple passwords, especially those that are alphanumeric gibberish. It's essential to assure that the federated search technology is properly linked to databases and that off-site users are able to access the search interface with ease. End users will return to Google if access via the federated search interface is not extremely user-friendly.

Jane Prestebak, director for media services and instructional technology, Robbinsdale (Minnesota) area schools, has been looking at federated search options. At this time, the product cost is a limiting factor, she says. Reductions in budgets make purchasing a product that does not provide content a hard sell. Doug Johnson, director of media and technology, Mankato (Minnesota) area schools, concurs with Prestebak. He says that while federated search technology is intriguing, he questions the vendors' concept of what costs can be borne by schools.

Subscription databases were once too expensive for all except the very large or well funded schools, but over the past 10 years, database pricing has become an affordable necessity. Hopefully, federated searching technology pricing will have a similar curve.

Conclusion

Before contracting for a new library automation system, check for state or regional library automation standards. These standards could influence the decisions you make. Along with other new library automation features that add cover images, tables of content, summaries, author notes, book reviews, and excerpts to collection records, multi-database searching adds a new dimension to school library automation. These features appeal to the Web-savvy generation of students who want information provided visually and quick.

Now if we could only automate returns of overdue items and materials shelving, the library world would be truly revolutionized!

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