The Federated Search Solution

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Abstract

Federated search provides a single search interface that allows users to search multiple online resources simultaneously—subscription databases, library catalogs, and other electronic resources—with one query that returns one list of results. The large number of resources and the complexity of the search process make implementation of federated search a practical solution for larger institutions. The author suggests that it also makes sense for school libraries.

Keywords

Access to information, database searching, electronic information resource searching, federated searching, information retrieval, school libraries

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In recent years, libraries of all types have been spending an increasing portion of their budgets on electronic resources. These resources provide access to a rich body of information via an array of disparate packages: multidisciplinary databases, subject-specific databases, journal packages from major publishers, individual electronic journal subscriptions, electronic books, and online reference works. Many school libraries are providing access to an increasing number of databases and other electronic resources, often through consortial buying, through their state library, or through another state organization serving libraries.

Although increased electronic access to a larger body of information is good news for our students, the variety and complexity of these resources can be very challenging. It is difficult for a novice researcher to know where to begin. The names of databases rarely describe their content. Both the functionality and the look and feel of these products vary significantly. Students find these resources to be challenging to use, and—because of their simplicity and ease of use—appear to prefer to use Google or Yahoo. Unfortunately, search engines return results that may not be as authoritative, comprehensive, reliable, or current as the materials provided by the school library.

WHAT'S THE SOLUTION?

To address the growing complexity of online research, many libraries have implemented federated search products. Federated search provides a single search interface that allows users to search multiple online resources simultaneously—subscription databases, library catalogs, and other electronic resources—with one query, that returns one list of results. Federated search helps users find resources across library collections. The user does not need to know of the existence of particular databases, nor does he need to know how each individual search interface works. In the basic search mode, federated search provides a single search box offering a Google-like experience. With federated search, librarians select the sources that will be accessible via the search form, thus the federated search will potentially deliver more authoritative results.

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The large number of resources and the complexity of the search process make implementation of federated search a practical solution for larger institutions. Does it also make sense for school libraries? If the goal is to help students more easily connect with the information they need, then the answer is yes.

HOW DOES FEDERATED SEARCH WORK?

Federated search sends a user query to the library catalog, selected databases, and other online information systems. The results collected from the databases are merged into one list of results that can be manipulated and sorted by the user.

Perhaps the best way to understand how federated search works is to look at an example, such as INSPIRE—Indiana's Virtual Library—that utilizes a product called WebFeat Express. INSPIRE, a service of the Indiana State Library, provides access to a collection of commercial databases and other information resources to citizens of Indiana. WebFeat (now part of Serials Solutions) is the leading vendor in the federated search market.

The default setting at the INSPIRE database page is the basic search mode. The user can simply input search terms and search all the available resources. He could limit the scope of the search by selecting a category from a drop-down menu containing 14 categories (academic, biographies, business & careers, education, encyclopedias, etc.), or by selecting the specific resources to be searched from a list of more than 40 options. The rich collection of resources available through INSPIRE includes databases (Academic Search Premier, Biography Resource Center, Business Source Premier, Gale's Contemporary Authors, and many more), government Web sites (the U.S. Census Bureau and IN.gov—Indiana's public information portal), electronic books (from Bartleby.com, NetLibrary, and Project Gutenberg), and an online encyclopedia (Funk & Wagnalls)—as well as WorldCat, Google Scholar, and the Directory of Open Access Journals.

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Alternatively, the user can toggle to the advanced search screen, which has three search boxes that allow searches by keyword, publication, title, author, abstract, or subject. The user can limit the search by publication date or full text only. From the advanced search screen, the user can select from the same categories listed on the basic screen or select from the full list of available resources.

SELECTING A PRODUCT

Make a written wish list identifying the features that meet your needs. Take the time to figure out what you would like the product to do for your students—and what will be easiest for you to manage. If you begin with a wish list, you will be more likely to find a product with the features that meet your needs. Examples might include advanced search functions that you and your students are familiar with, easy customization of the interface, and straightforward usage report generation.

There are many federated search products on the market; shop around and arrange for trials of several products. Some may be better suited to academic libraries or public libraries than to a K-12 setting. Although you could test the product in the exhibit hall at ALA or AASL, try to arrange for a trial at your library so that your colleagues in both the library and the classroom have an opportunity to test it as well. Have your students participate in the trial and get their feedback.

In addition to commercial choices, there are open source options available. Open source is a great concept, but sometimes these peer-based collaborations come with significant challenges. Your willingness to choose this option may depend upon your own technical expertise and the level of available IT support.

Early in the product selection process, you will want to decide which databases and other resources to include. Your list need not be comprehensive. A library might choose to include only the catalog and a few key databases. Limiting to a small set might result in a more satisfying search experience for students. Federated searching is not intended for specialized research, but for the generalist who needs a small selection of resources for a paper or presentation.

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The product needs to be simple to use—and fast. If not, your students will return to Google after one attempt. Is the interface intuitive? Will most students be able to use this product without instruction from a librarian or teacher? It should be simple to select the resources to be searched. The student should be able to determine which fields in a record he would like to search—at minimum, the author, title, subject, and abstract. Can the student limit his search by source? By date? Can he limit the search to full text only?

The display of results needs to be clean and the elements of each result should be easily identifiable. It would be beneficial if the product identifies which database or source that the results came from to help the student learn which databases are most appropriate for which subjects. The student should be able to sort the results in any way that suits his needs. Some products will cluster the results to group related content under more specific headings that new researchers can use to narrow their search.

One of the most attractive features of a federated search product is the option to access information using just one search box. Students are accustomed to this by using Google, Yahoo, Facebook, YouTube, and Wikipedia—and prefer it over the multisearch box found in the advanced searches of most article databases. The downside of one search box is that a two- or three-term search without limiters will lengthen the retrieval time and return a list with more results than most students will be willing to examine closely. For those wanting to use more advanced search options, an advanced search page should be available.

Many products will offer additional features. Search alerts and RSS feeds may be valuable for someone at a college or university, but not helpful in a school setting. Focus on the core functions.

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MANAGING THE PRODUCT

Consider issues of installing, maintaining, hosting, customizing and branding, and tracking usage. Although vendors may consider their product "hassle-free," that may not be the case. Consulting other library customers can provide valuable input as to the ease of installation and maintenance.

Managing a system locally requires either IT support or personal technical expertise. While local management may give the library more flexibility and control, you might like the vendor to take responsibility for maintenance and upgrades. Also, will you host the product or will the vendor? Perhaps you addressed this issue when you implemented a catalog or a course management system and already know what is appropriate for your situation.

Customization will allow you to shape not only the look and feel of the product, but also the functionality. For example, the administrative module allows you to select the resources and products to be included in the federated search. Can you also create content categories so that your resources can be grouped by subject matter? If, for example, grouping resources by categories—arts, humanities, social sciences, science, and news/current events—would be useful, select a product that will allow you to choose headings that your students will understand. Some vendors may do customization and branding for you. If you want to do this yourself, choose a product that lets you customize and brand with relative ease. Be aware that this will pose challenges if you do not have the technical expertise or have knowledgeable and helpful staff members at your school who will help you achieve the look, feel, and functionality that you want and need.

You will want to be able to track the use of the product and determine which resources students accessed and used as a result of a federated search. Tracking database use is a time-consuming chore, especially the time it takes to massage data into a useful format. The product should include options that allow the production of statistical reports on demand through the administrative module. Will these canned reports generate the usage information that you need? Can you create custom reports?

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IS FEDERATED SEARCH RIGHT FOR YOUR STUDENTS?

Students generally begin a search for information with Google and tend to use the sources that appear at the top of the results list. Students want to search and retrieve information with the least amount of effort and they want a single search interface that searches "everything." Federated searching offers a great solution, as it is simple and comprehensive. Librarians will be able to exercise some control of the quality of the information found by selecting the databases and electronic resources that will be included.

With federated search, students don't have to choose a format such as a book, magazine or newspaper before conducting the search. If students have the opportunity to search article databases and the library catalog at the same time, they will discover materials in your own collection that they may not have otherwise found. Without federated search, some students would not have searched your library catalog at all.

Federated search does have shortcomings. The response time for a broad search can be lengthy. Because of the nature of federated search, duplication in the results list will occur. Many advanced search options available in some databases will not be available when searching in a federated search environment. Federated search will not satisfy every student's need, nor is it effective for all types of research. Complex research projects will require the use of subject-specific databases

By focusing on the needs of the students and taking into consideration their research styles, the introduction of a federated search system is likely to enhance their search satisfaction. Ultimately, federated search may help them locate more authoritative, comprehensive, reliable, and current materials to support their assignments. Federated search is not a replacement for what we have now— it is an additional tool for providing access to the resources in your library.

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