Innovative Use of SFX and Legacy Data to Develop a Library Quick Search Tool & Its Mobile Extension

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UMDNJ Overview

- Largest standalone health sciences university in U.S.
- Eight schools: GSBS, NJDS, NJMS, SHRP,RWJMS, SN, SPH, SOM, on 5 campuses
- Student enrollment: 6,063
- Full and part-time faculty: 2,949
  - a) clinicians
  - b) researchers
- Residents & interns: 1,315

UMDNJ University Libraries

- ➢ Four campuses libraries:
  - ✓ G.F. Smith Library in Newark
  - ✓ Robert Wood Johnson Library on the New Brunswick/Piscataway campus
  - ✓ Camden Campus Library
  - ✓ Health Sciences Library at Stratford
- ➢ SFX implemented in 2005
- ➢ Shared electronic resources (as of May 2011)
  - ✓ E-Journals: 12,650 unique titles; 26,000 active records
  - ✓ E-Books: 710 titles
  - ✓ Databases: 86 databases
  - ✓ Images collections & Videos: 20 including publicly available
- ➢ Separate ILL services
- ➢ Independent print collections (63,000 books)

Rationale for Developing Library Quick Search Tools

➢ Redesign of website planned.

➢ Conducted focus groups with students on the following:

- ✓ Comments & suggestions on old website
- ✓ Ideas for better features on new website
  - o Sample features presented for review
- ✓ Single & one-stop search box was favored
  - o capability to search PubMed from homepage
  - o e-resources titles only (catalog is not a good choice)
  - o directly linked to the e-resource's site (not favor of choices on SFX menu)
  - o Quick search speed is preferred (tried federated search tools but it did not work out)

➢ Some Issues

- ✓ Static web pages for many e-resources
- ✓ Limits of OPAC
- ✓ Experiences with a commercial federated search tool
- ✓ SFX A-Z List and Menu

Design Goals & Objectives

➢ Create a one-stop search for all e-resource titles including subject guides, e-databases, e-books, and e-journals.

➢ Make the Search Box in the center of the Library's front page.

➢ Provide two most popular databases for direct search: PubMed & CINAHL.

➢ Prioritize the core medical content while making all titles available.

➢ Ensure quick search speed.

➢ Keep interface and display format simple and easy.

Other Considerations

➤ Low or minimal cost – by utilizing existing hardware and mainly open sources software

➤ Taking advantage of external sources' searching capability.

➤ Making full use of existing commercial and legacy systems

➤ Being flexible enough to provide future expansion. More features added at later stages, e.g.

  ✓ Auto-complete function for core titles

  ✓ Mobile extension

What Quick Search Is NOT

➢ It is not an enterprise level application - does not have a complicated multi-layers architecture.

➢ It is not replacing but supplemental to OPAC.

➢ It is not a true federated search but it has similar functions.

➢ It is not a discovery interface - no unified index, no relevance ranking, and no faceted browsing, etc.

What Quick Search IS

➢ It is a simple query interface that searches all e-resources.

➢ It is a lightweight and hybrid search toolkit consisting of a set of scripts.

➢ It was built upon various open source tools/technology: Perl/PHP/Javascript/XML/AJAX/jQuery/iQuery Mobile/MS ACCESS/MySQL, etc.

➢ It is a real low-cost approach – combining the existing library legacy data and the data exposed by SFX.

What Quick Search IS – Cont'd

➢ It was locally developed by our System Librarian.

➢ Minimal cost of software and hardware.

➢ For SFX V3 – data was downloaded to a local server; for SFX V4 – it uses the real-time e-journal data from SFX.

➢ The legacy data was exported and converted into a relational database.

Quick Search Features

- ➢ Embedded in the center of the newly designed website. http://libraries.umdnj.edu/rwjlbweb

- ➢ Direct search in the most popular databases: PubMed & CINAHL

- ➢ One search for all e-resource titles including subject guides, e-databases, e-books, and e-journals.

- ➢ An A-Z e-title browsing list.

- ➢ Limited subject search included.

- ➢ Core title list enabled with auto-complete feature.

Quick Search Features – Cont'd

➢ Alternative path for searching print materials in OPAC.

➢ Embedded search for PubMed sub-category as well as all UMDNJ licensed clinical databases.

➢ A true article search functionality based on NCBI's E-utility.

➢ Extended into our new mobile web site using jQuery Mobile.

RWJ Library OLD Website

A Glance at RWJ Library's NEW Website

A Closer Look at the Quick Search Tools

The first quick search box is an embedded search script which provides a direct search against selected databases such as PubMed and CINAHL.

Parsers for PubMed & Others

Redirect.cgi is a simple perl script which provides a direct search against PubMed, CINAHL and other medical/clinical sources

```perl
    if ($strDB eq "pubmed")
   {
   ……...
   my $URL =
       "http://www.ncbi.nlm.nih.gov/entrez?holding=njunjnlib&otool=njunjnlib&dr=Abstract&term=$strTitle&history=y";
       print "<script type='text/javascript'>";
       print "window.location='$URL'";
       print "</script>";


   elsif ($strDB eq "cinahl")
   {
   ……...
    my $URL =
   "http://libproxy2.umdnj.edu/login?url=http://search.epnet.com/direct.asp?db=cin20&fquery=$strTitle&scope=site&history=y";
       print "<script type='text/javascript'>";
       print "window.location='$URL'";
       print "</script>";
   }
}
```

The second search box is a database-driven search program, capable of searching the UMDNJ e-resource collection including e-journals, e-books, databases, and subject toolkits. A limited subject search is available for e-books and databases. Titles can also be browsed by alphabet.

E-Resources Search Example

Auto-complete function is applied when searching for an e-resource's title

E-Resources A-Z List

Quick Search

Find articles:

Complete List of Databases

Find E-Resources by title:

A B C D E F G H I J K L M N O P Q R S

Search the Catalog:

E-Resources Titles Browsing List

Home > Electronic Journals

Browse E-resources Beginning with C

SUBJECT TOOLKIT:

Citing Sources of Information

Copyright & Intellectual Property

Cultural Competency

ELECTRONIC DATABASES:

CINAHL - via Ebsco

Cochrane Library - via Wiley

Community of Science [On behalf

COS Scholar Universe - via RefWorks

Current Contents Connect - via ISI

ELECTRONIC BOOKS:

C. Elegans II - E-book from NCBI Bookshelf

Campbell's Operative Orthopaedics - E-book from MDConsult

Campbell-Walsh Urology - E-book from MDConsult

Cancer Chemotherapy & Biotherapy - E-book from Books@Ovid

Cancer Medicine 6 - E-book from NCBI Bookshelf

ELECTRONIC JOURNALS:

C & D debris recycling - ISSN - 1078-3474 - full text available from 1997 - 1998

Ca - ISSN - 1542-4863 - full text available from 1950 -

CA magazine - ISSN - 0317-6878 - full text available from 2001 -

Cabinet maker & retail furnisher - ISSN - 0007-9278 - full text available from 1997 -

Cable vision - ISSN - 0361-8374 - full text available from 1999 - 2001

CAD/CAM Update - ISSN - 0361-8374 - full text available from 1999 -

Calcified tissue international - ISSN - 1432-0827 - full text available from 1997 - 2008

E-Journals Display Format

Clinical Tools:

ACP Journal Club

Access Medicine

Cochrane Library

D.A.R.E

DynaMed

Essential Evidence Plus

First Consult

Medical Letter

Other databases:

CINAHL

Medline

MD Consult

Health United States 2004 - E-book from NCBI Bookshelf

Health United States 2005 - E-book from NCBI Bookshelf

Priorities in Health - E-book from NCBI Bookshelf

Public Health & Preventive Medicine - E-book from Stat!Ref

ELECTRONIC JOURNALS:

American journal of public health - ISSN - 1540-0048 - full text available from 1975 -

American journal of public health (1912) - ISSN - 0271-4353 - full text available from 1912 - 1927

American journal of public health and the nation's health - ISSN - 0002-9572 - full text available from 1928 - 1970

Annals of tropical medicine and public health - ISSN - 0974-6005 - full text available from 2008 -

Annual review of public health - ISSN - 1545-2093 - full text available from 1997 -

Australian and New Zealand journal of public health - ISSN - 1753-6405 - full text available from 1997 -

BMC public health - ISSN - 1471-2458 - full text available from 2001 -

Bulletins of the Public Health - ISSN - 1471-2458 - full text available from 1878 - 1878

Canadian Journal of Public Health - ISSN - 0008-4263 - full text available from 1998 -

Critical public health - ISSN - 1469-3682 - full text available from 1998 - 2010

Disaster Medicine & Public Health Preparedness - ISSN - 1938-744X - full text available from 2007 -

European Journal of Public Health - ISSN - 1007-1100 - full text available from 2008 - 2010

Evidence-based healthcare & public health - ISSN - 1744-2257 - full text available from 2004 - 2005

Health services reports - ISSN - 0090-2918 - full text available from 1972 - 1974

Indian Journal of Public Health - ISSN - 2229-7693 - full text available from 2010 -

International Journal of Collaborative Research on Internal Medicine & Public Health - ISSN - 1840-4529 - full text available from 2009 -

International Journal of Environmental Research and Public Health - ISSN - 1660-4601 - full text available from 2008 -

Journal of Environmental and Public Health - ISSN - 1687-9813 - full text available from 2009 -

Journal of public health - ISSN - 1613-2238 - full text available from 1997 -

Journal of public health - ISSN - 1741-3850 - full text available from 2008 - 2010

Journal of public health dentistry - ISSN - 1752-7325 - full text available from 1997 -

Journal of public health management and practice - ISSN - 1550-5022 - full text available from 2002 -

Journal of Public Health Policy - ISSN - 1745-655X - full text available from 2006 - 2010

Legacy Data Source

- ➢ Jinput data file:
  - ✓ over 5800 medical related core titles
  - ✓ a flat BerkleyDB file converted to a Oracle table
  - ✓ original purpose: short URL/statistics
  - ✓ continue using and well maintained
- ➢ Jinput data file was downloaded and converted into a MS Access table
- ➢ Subject link tables were created: toolkit, ebook_subject_link, and e-database_subject_link.
- ➢ Static web pages such as subject guides
- ➢ Those tables were joined with Jinput table to form a relational database.

Legacy Data Converted into RDBM

Legacy Data Access

Following php script using ADODB to provide search for e-books, e-databases & toolkits by title, name and subject.

Example SQL query to find e-books by title and subject in ADODB:

```
$query = "SELECT DISTINCT title, url, database, cgi
FROM jinput
WHERE type = 'ebook' AND title LIKE '%$keywords%'
UNION SELECT DISTINCT title, url, database, cgi
FROM jinput
WHERE cgi IN (SELECT cgi FROM ebook_subject_link WHERE subject_id = (SELECT subject_id FROM
     ebook_subject WHERE subject = '%$keywords%'))";
```

PHP code to display the search results:

```
while(!$objrs->EOF) {

     …………

$realUrl = "<li><a href=\"http://www.umdnj.edu/cgi-bin/libjournal/" . $cgi->value . "\" target='_blank'\"";
     print ($realUrl . ">" . $title->value . "</a> - E-book from " . $database->value . "</li><br>");
```

SFX Data Access

- Jinput has only 5800 titles.
- SFX has over 12,600 titles.
- Jinput has no other metadata such as ISSN and holdings.
- SFX provides ISSN, holdings and SFX menu.
- Initial approach: the whole local instance was downloaded to the Quick Search server over night.
- After upgrading to V4, this approach is no longer feasible.
- A real time access to SFX data was built.

Access SFX V3 Data

Threshold:

$obj->parsedDate('>=','2008','84','undef') && $obj->timediff('>=','1y')

Example sql query to find e-journals locally in MySQL:

```
$query = "SELECT A.TITLE_NORMALIZED, F.THRESHOLD_GLOBAL,
   S.ISSN_ID, F.THRESHOLD, A.OBJECT_ID,
   MIN(SUBSTRING(F.THRESHOLD_GLOBAL, 23, 5)) AS HOLDING
   FROM AZ_TITLE A, AZ_FILTER F, AZ_LETTER_GROUP L, ISSN S
   WHERE A.OBJECT_ID = F.OBJECT_ID
   AND A.OBJECT_ID = S.OBJECT_ID
   AND L.AZ_LETTER_GROUP_ID = A.AZ_LETTER_GROUP_ID
   AND A.TITLE_NORMALIZED LIKE '%$keywords%'
   GROUP BY A.OBJECT_ID
   ORDER BY A.AZ_TITLE_ORDER";
```

Access SFX V4 Data

Example sql query to direct find e-journals in SFX 4:

$query = "SELECT A.TITLE_DISPLAY, **R.FROM_YEAR**, **R.TO_YEAR**, A.OBJECT_ID
  FROM AZ_TITLE A, AZ_FILTER F, AZ_LETTER_GROUP L, AZ_TITLE_SEARCH
   T,
  RAPID_SERVICE_INDICATOR R
  WHERE A.OBJECT_ID = F.OBJECT_ID
  AND A.OBJECT_ID = R.OBJECT_ID
  AND L.AZ_TITLE_ID = A.AZ_TITLE_ID
  AND A.AZ_TITLE_ID = T.AZ_TITLE_ID
  AND F.**IS_RELATED = 'NO'**
  AND T.**TITLE_SEARCH** LIKE '%$keywords%'
  GROUP BY A.AZ_TITLE_ID
  ORDER BY A.TITLE_SORT
  ";

SFX Data Display

PHP code to build an OpenURL and display the search result:

…………..

$beginning =
"http://sfx.umdnj.edu/sfxlcl3?url_ver=Z39.882004&url_ctx_fmt=infofi/fmt:kev:mtx:ctx&ctx_enc=info:ofi/enc:UTF-8&ctx_ver=Z39.88-2004&rfr_id=info:sid/sfxit.com:azlist&sfx.ignore_date_threshold=1&rft.object_id=";

$ending = "&svc.holdings=yes&svc.fulltext=yes";

………..

$sfxlink = $beginning . $object . $ending;

$sfxdisplay = "
$title - ISSN - $issn - full text available from $holding -$holding_end
";

echo $sfxdisplay;

E-Resource Search Results

Search results go beyond the titles. Some content info is also retrieved from PubMed and other databases

Beyond Title – Embedded Database Search

Beyond Titles – Full Text Article Search

Found "PUBLIC HEALTH" in the following articles:

Winkle M, Crowe TK, Hendrix I.

Service Dogs and People with Physical Disabilities Partnerships: A Systematic Review.

Occupational therapy international

2011 Aug 19;

Smith P, Hogg-Johnson S, Mustard C, Chen C, Tompa E,

Comparing the risk factors associated with serious versus and less serious work-related injuries in ontario between 1991 and 2006.

American journal of industrial medicine

2011 Aug 19;

Erickson CS, Zaitoun I, Haberman KM, Gosain A, Druckenbrod NR, Epstein ML,

Sacral neural crest-derived cells enter the aganglionic colon of Ednrb(-/-) mice along extrinsic nerve fibers.

The Journal of comparative neurology

2011 Aug 19;

UMDNJ UNIVERSITY LIBRARIES
University of Medicine and Dentistry of New Jersey

Title: Service Dogs and People with Physical Disabilities Partnerships: A Systematic Review.

Source: Occupational therapy international [0966-7903] Winkle yr:2011

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Comparing the risk factors associated with serious versus and less serious work-related injuries in ontario between 1991 and 2006

Peter Smith PhD[1,2]*, Sheilah Hogg-Johnson PhD[1,2], Cameron Mustard ScD[1,2], Cynthia Chen MSc[1], Emile Tompa PhD[1,2,3]

Article first published online: 19 AUG 2011

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Issue

American Journal of Industrial Medicine

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Quick Search New Interface

Alternative Path to Catalog

Library OPAC

Mobile Quick Search

➢ Exploring various JS based mobile frameworks such as JQTouch and Sencha Touch

➢ Choose jQuery Mobile

   ✓ A unified UI system across all popular mobile device platforms.

   ✓ Theme based dynamic touch interface

   ✓ Broadly compatible with HTML5/CSS3

   ✓ It is small size and load quickly. Only 12KB for the JavaScript library, 6KB for the CSS, plus some icons.

   ✓ Simple and easy to learn.

E-Resources Quick Search Tools Optimized for Mobile Devices

The same quick search tool can be used to search the electronic resources titles on a mobile device.

E-Resources Quick Search: E-Books

E-Resources Quick Search: E- Journals
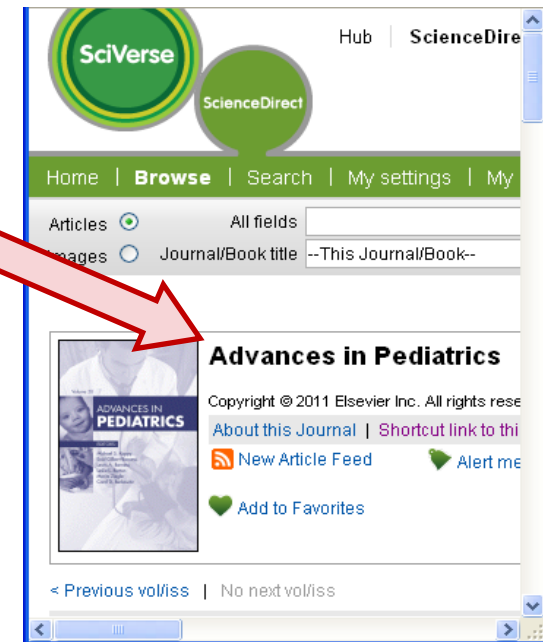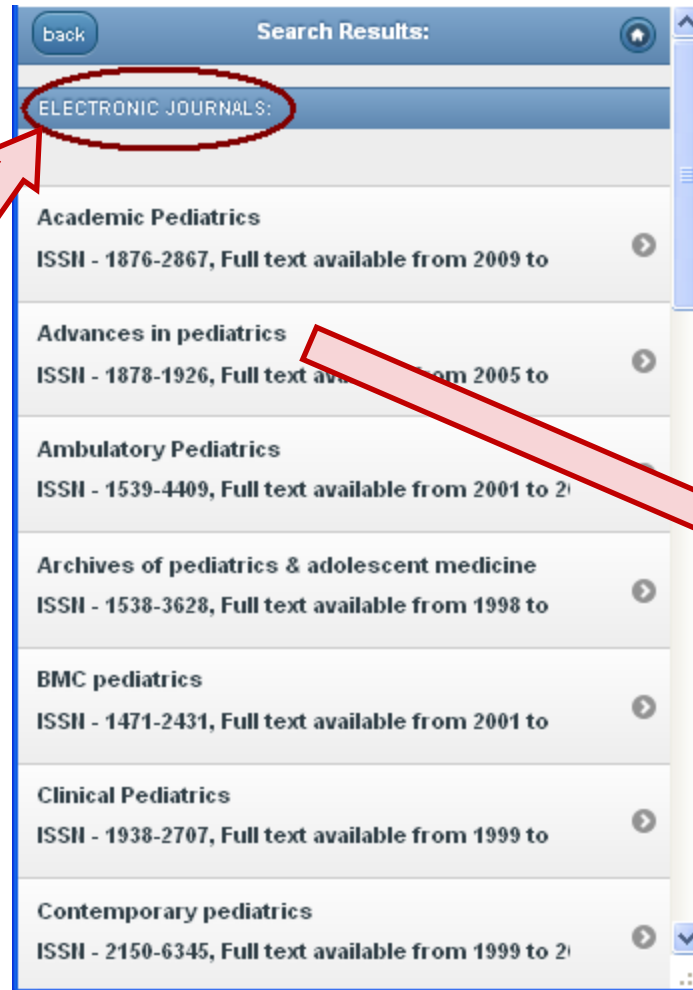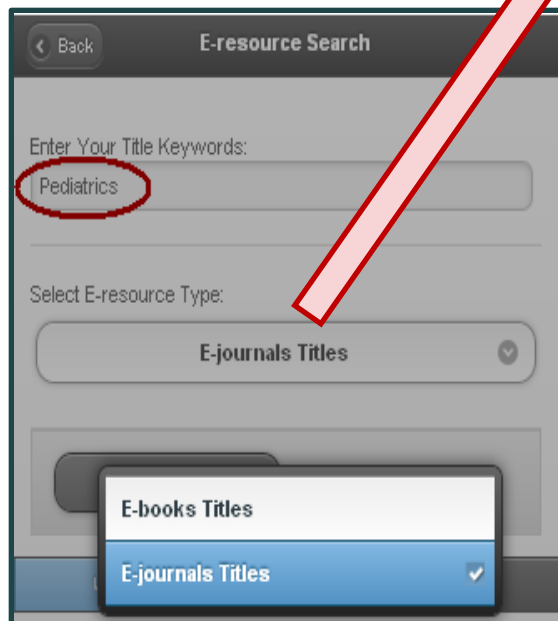
Benefits & Impact

➢ Provides a more convenient and efficient web access for our users to find key biomedical content.

➢ Offers one-stop searching of UMDNJ e-resources either on a desktop computer or a mobile device.

➢ Provides direct search for PubMed & CINAHL.

➢ The A-Z listing acts as an alternative access points for e-database, e-books, & e-journals.

➢ Adopted in various ways by other campus libraries.

➢ Possible to be shared with and customized by other health care libraries.

Benefits & Impact – Cont'd

- ➢ Demonstrated that we care about our users' concerns and responded to their needs effectively with innovative applications and services.

- ➢ Equally important we were able to accomplish the goal without any additional funding. This is particularly significant in today's economic downturn.

- ➢ Maximizes utilization of UMDNJ's e-resources.
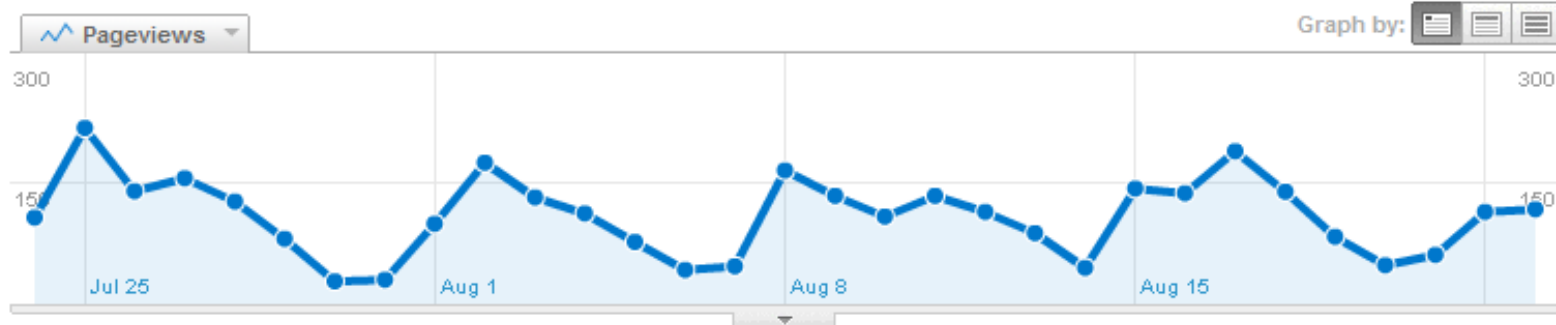
Stats for Quick Search - Titles Only

Stats for Quick Search – PubMed & CINAHL

Challenges & Future Plans

➢ Not as sophisticated as discovery/federated search tools .

➢ Not single search box interface yet - planning to combine the PubMed search and E-title search into one search box

➢ Integrate other types of materials such as images & videos.

➢ Enhance subject search.

➢ Add more alternative options, e.g. ILL form & recommended resources based on usage data.

➢ Add more functionality, e.g. spell checker for PubMed search; export option such as Endnote?

➢ Dynamically create specialty subject toolkits with newly developed techniques

➢ Expand legacy database to ultimately replace current static e-books and databases list.

Thank You!

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Mobile Demo