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Introduction

New technologies, the ubiquity of the Internet, and the superabundance of available information have given librarians new opportunities to envision their roles, service solutions, and collaborations in this evolving information environment. More than anything else, digital content and technology-rich library services are moving the library “presence” outside the physical building to support users in their digital spaces, wherever and whenever. In this virtual library world, librarians are creatively distributing services outward into communities and to library users on the go.

Libraries have responded to this “digital shift” in a wide variety of ways. Today’s library website serves as the virtual front door of the library; a gateway to quality and specialized resources; a mission-critical service point that offers assistance, guidance, and instruction; and a platform for user engagement. Catalogs are becoming more “webby” and integrated with other discovery and federated search tools and into clinical workflow environments. The increasing prevalence of mobile devices and tablet computing in research, patient care, and teaching has given rise to libraries providing mobile-friendly websites, content, and support services to meet the needs of a growing mobile library community.

The focus of this first column is to provide concrete examples of virtual projects in health sciences libraries that illustrate this digital shift. All these projects are practical, real-world implementations of a new technology or application in health sciences libraries that extend services beyond the confines of the physical library. Each report provides a brief narrative description of the project, technical background information, and a contact person for readers who would like

to follow up with relevant staff to obtain further information.

The list of virtual projects in this year’s column was developed by a small advisory group of MLA members who are technology experts: Kimberly Barker, Claude Moore Health Sciences Library, University of Virginia; Janis F. Brown, AHIP, Norris Medical Library, University of Southern California; Michelle Kraft, AHIP, Cleveland Clinic Alumni Library, Cleveland Clinic; Eric Schnell, Prior Health Sciences Library, Ohio State University; and Elizabeth C. Whipple, AHIP, Ruth Lilly Medical Library, Indiana University. A special call for projects was made in MLA-FOCUS and sent to various MLA section email discussion lists at the beginning of 2013 that garnered many suggestions. The virtual projects highlighted in the column were primarily identified through that call. General guidelines for the column and an author’s guide for contributors have been developed with the helpful assistance of the advisory committee and *Journal of the Medical Library Association* Editor Susan Starr <http://www.mlanet.org/publications/jmla/author_reviewer_info.html>. Future columns will be published on an annual basis that explore a particular theme or topic in conjunction with periodic calls and announcements to encourage submissions from all types of libraries.

Health sciences librarians are doing amazing things in technology and innovation, coming up with smart solutions, and finding creative ways of “blending in” to better serve their user communities. Their efforts to create and test new models for information access and delivery are making the library vital and relevant for their communities in the twenty-first century. Please consider sharing your knowledge and experiences with implementing virtual projects in your library to inspire and encourage your peers, partners,

and communities. If you have a virtual project that you think has transformed the way your library works, let us know. Questions, submissions, and suggestions should be directed to Susan Lessick at slessick@uci.edu.

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Responsive web design for an academic health sciences library website

Submitted by Eric Rumsey, MA, MLS; Linda Roth; William Shane Wallace, MSLS; University of Iowa

Before the iPad came out in 2010, the working assumption was that web pages needed to accommodate only two screen sizes: desktop/laptop and iPhone/smartphone sizes. Accordingly, many sites, including libraries, built separate mobile pages for smartphones. With the iPad, as well as several other tablets with differing screen sizes, it has become increasingly impractical to make separate web page sizes for each screen size. Responsive web design (RWD) is a way of coding web pages so that they look good on any screen. Since it was introduced in 2010, RWD has become popular in business and the dotcom world, although its adoption in the academic and library environments has not yet become widespread.

Because the University of Iowa Libraries has experienced and skilled information technology staff who are equipped to handle the complexities of RWD, we were able to begin implementing RWD in May 2011. When we began considering the switch to responsive design, we had an existing theme for our site that we needed to modify. In retrospect, it might have been easier to choose an

existing responsive theme, but since we had just redesigned our site the year before, we decided to modify what we had.

The coding process involved using the viewport meta tag that is contained in each hypertext markup language (HTML) file, which tells the browser how to behave on a mobile device. The main technique for implementing responsive design is to use media queries to assign style sheets to the HTML files based on the width or height of the browser window. These media queries can be defined for any width, but most sites use a few common breakpoints for phones, tablets, and large screens. For example, a media query defined with a maximum width of 480 pixels will generally apply to all smartphones. One of the challenges of responsive design is deciding what to do about the navigation menu at the top of the page. Our first responsive menu had a stacked column layout, but this made finding the main content below the menu awkward. Our current navigation menu is a drop-down menu consisting of our most heavily used links. Having a drop-down menu frees up space so that the content of the page is prominent. More information on the techniques for developing a responsive design and for a list of libraries using RWD can be found on Eric Rumsey's Seeing the Picture blog <<http://blog.lib.uiowa.edu/hardinmd/category/responsive-design/>>.

Implementation of RWD on our website <<http://www.lib.uiowa.edu/hardin/>> is an ongoing project. We will continue to test and do usability studies to make sure the design is functional on all new devices. The number of people coming to our website via mobile devices has tripled in the last year, and we expect that proportion to increase. Utilizing RWD, in our opinion, is the best option for our future mobile strategy. A responsive site means less work for staff because there is only one site to maintain. It also means that the mobile user is presented with a fully functional site, not a stripped-down version. Finally, we see that

Table 1
Resources included in Mount Carmel Health Sciences Library eSearcher

Free	Subscription
Health Information Translations	5MinuteConsult
MedlinePlus	AccessMedicine
Mount Carmel A-Z Catalogue: journals	ClinicalKey
Mount Carmel Catalogue: books and e-books	Clinical Pharmacology
National Guideline Clearinghouse	Cochrane Library
PubMed (MEDLINE)	EBSCO: CINAHL Plus with Full Text
PubMed Clinical Queries	EBSCO: Education Research Complete
Trip Database	EBSCO: Psychology and Behavioral Sciences Collection
	Epocrates Online Premium
	First Consult
	King Guide to Parenteral Admixtures
	MD Consult
	Mosby's Nursing Consult
	Mosby's Nursing Skills
	ProQuest Nursing & Allied Health
	PsycINFO

the industry is clearly moving to RWD as the best-practice standard for building mobile-optimized sites.

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Implementation of a federated search in a multi-hospital system

Submitted by Donald S. Pearson, MBA/MIS; Stevo Rokсандic, MBA, MLIS; Mount Carmel Health System

Mount Carmel Health Sciences Library (MCHSL) provides diverse electronic resources to support professional medical staff, faculty, and students and serves as the information hub for a five-site hospital system and nursing college. Library customers demand quick and authoritative evidence-based information to be available remotely and 24/7/365. To meet their expectations, MCHSL saw the implementation of a simple but powerful federated search engine as a strategic and essential need. After evaluating available federated search products, MCHSL chose the reasonably priced SwetsWise Medical Searcher, which provided a variety of advanced search capabilities and was able to return immediate search results along with a visual ranking of results by topic. As a product of a leading

subscription service company, rather than a single-publisher search platform, Medical Searcher offered impartial and seamless access to almost all of our premier medical databases.

In October 2012, MCHSL launched a new website <<http://library.mchs.com>> prominently featuring a single search interface powered by Medical Searcher and promoted as "MCHSL eSearcher" to differentiate it from the previous search box, which only searched MCHSL website content. eSearcher provides results from twenty-four evidence-based, peer-reviewed resources that can be grouped by MCHSL-predefined categories.

The majority of the implementation tasks involved deciding which of our electronic resources to search and setting up "connectors" to each. To set up a connector to a resource, MCHSL and Swets staff worked together to compile information on each resource's description, the uniform resource locator (URL) to its search page, and the process to allow Internet protocol (IP) authentication. Setting up IP authentication for twenty-four resources was the most time-consuming part of the process and consumed about three weeks of correspondence with all database vendors (Table 1).

From the moment eSearcher went live, feedback from various physician groups and committees was gathered. The most enthusiastic feedback that we have received was from a Mount Carmel College

of Nursing instructor who used eSearcher to find articles for his course. He had allotted an hour in his schedule for the article search, but by using eSearcher his task was completed in sixty seconds! Other customer feedback has commended eSearcher's authoritative results, fast response time, visual appeal, multiple filters, and overall presentation.

Our first six months of experience with eSearcher has not been without issue, however. A feature of eSearcher allows users to save customized searches and send results via email. This functionality requires creating an account with eSearcher. Upon testing, we found that many email systems, including our corporate system, viewed the response emails from eSearcher as spam. In addition, upon renewing our contract with an important database vendor that had initially been included as one of the connectors, we found contractual language expressly forbidding that database's inclusion in federated searches. Several weeks of negotiations resulted in us having to remove that database from eSearcher. These issues pointed to potential technical and nontechnical issues that can occur with the implementation of a federated search engine.

Currently, we are evaluating statistics gathered from the first six months' usage of eSearcher and optimizing the search engine for mobile device access. Implementing advances in web technologies, such as federated searching on mobile devices, is an integral part of the strategic development of the MCHSL website. With the customer experience always in mind, we will continuously reassess the market of federated search products. This cycle of implementation and evaluation of new tools is key to successfully managing our knowledge-centric services.

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Large-scale iPad deployment in a new medical school

Submitted by Nadine Dexter, MLS, AHIP; Shalu Gillum, JD, MLS, AHIP; Michael Garner, MLS; Deedra Walton, MLS, AHIP; Bethany Ballinger, MD; University of Central Florida

In 2010, the Harriet F. Ginsburg Health Sciences Library at University of Central Florida College of Medicine (UCF COM) became the first medical library in the country to deploy Apple iPads to all of its medical students and full-time teaching faculty.

Initially, the Apple iPod touch was the device of choice, and in August 2010, iPod Touches were deployed to all medical students. The release of the Apple iPad in April 2010 prompted the library to conduct a seven-week study using twenty sixteen-gigabyte, WiFi-enabled iPads among faculty and staff. The goal was to determine whether the iPad's innovative "instant on" technology would promote more frequent use of library electronic resources. Study participants completed a pre- and post-survey to determine what their expectations were of the device, what kinds of tasks they performed with it, and whether they accessed library e-resources. Most users indicated that they found the iPad markedly improved their productivity because of ease of access to commonly used applications, such as email, calendars, and note-taking applications. Users also indicated that it was easier to access the library's resources and that they would be more likely to access library e-resources on the iPad than a desktop or laptop. The library did add an icon on the home screen of all iPads in the study that linked directly to the library's website.

The success of this study led to the expansion of the iPad project to include all students and full-time faculty. The turning point in the

library's iPad study came in October 2010 during the UCF COM open house. Library Director Nadine Dexter, AHIP, gave a demonstration on the use of the iPad in medical education and shared some of the results of the library's study. Dexter demonstrated how students could use library-purchased apps like Epocrates, a drug interaction checker, and DynaMed, an evidence-based clinical reference app, to efficiently assist patients in a clinical setting. The iPad, as she explained, is a tool to access library e-resources.

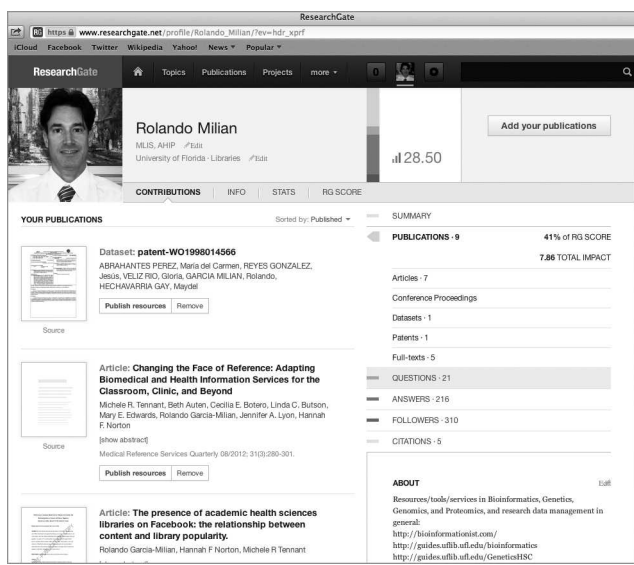
A generous benefactor was impressed by Dexter's demonstration and donated \$120,000 to support the library's iPad initiative, enabling the library to purchase iPads for all current medical students. In December 2010, all medical students were given an iPad, and in January 2011, all full-time teaching faculty were also provided an iPad. Ongoing funding for purchasing student iPads has come from student equipment fees.

Incoming medical students are given an iPad in August. The library purchases access codes for the following apps for first-year students: Epocrates, DynaMed, and Stedman's Medical Dictionary. Third-year students receive codes for PEPID and Geriatrics at Your Fingertips. The library also purchases interactive e-textbooks from Inkling. Codes are deployed to students via email.

While all members of the Health Sciences Library team are trained in the use of the iPad, 2 members provide more in-depth support and instruction to 500 iPad users. Formal instruction to students and faculty is delivered through one-on-one sessions, lectures, and small group meetings. The library's iPad deployment has continued to date, with all incoming medical students receiving a tablet. In August of 2013, that tablet will be an iPad mini.

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Figure 1
Rolando Garcia-Milian's ResearchGate profile



Provision of online reference through ResearchGate

Submitted by Rolando Garcia-Milian, MLIS, AHIP; Hannah F. Norton, MSIS; University of Florida

The academic research system depends on the constant communication of information, methodologies, resources, and knowledge among scientists around the world. Given the importance of communication, it is not surprising that research networks (e.g., Nature Networks, VIVO, and BiomedExperts) are becoming essential components of the global biomedical research environment. Researchers use these networks when finding potential collaborators, showcasing expertise, and discovering resources and research partners.

ResearchGate (<http://www.researchgate.net>) is an online community research network that has 2.6 million researcher members from around the world. Individuals can join this network and create a free profile highlighting information such as their institutions, research interests, expertise, publications, and coauthors (Figure 1). Network members can follow one or many topical interest groups, called "topics" (e.g., biochemistry, bioinformatics, cancer therapy, and

data management) or create a new topic. Researchers can pose a question on one of their followed topics, and a notification is then sent to their account. In response, other network members can ask additional clarifying questions or provide answers to the question. This process is similar to the reference interview. Researchers can then vote each answer up or down, and the answer with the highest number of up votes is shown on top of the discussion thread. Each researcher is also assigned a ResearchGate score, which measures "scientific reputation." The University of Florida (UF) is well represented in ResearchGate, with 2,195 UF-affiliated researchers participating in the network, two-thirds of whom are biomedical researchers.

To evaluate the suitability of using ResearchGate for providing online asynchronous reference, a UF biomedical sciences librarian began providing reference over this network in 2011. The biomedical sciences librarian has answered 211 questions since then, with some of the answers ranking high in popularity, as shown by the number of up votes that they received. Answering these questions required the use of numerous subject-specific databases and

tools, such as Online Mendelian Inheritance in Man (OMIM), Gene Expression Omnibus, PubChem, Entrez Gene, Natural Standard, American Type Culture Collection, SIDER 2, TOXNET, and PharmGKB, among others. The librarian also participated in discussions on information literacy-related topics, such as avoidance of plagiarism, reference management software, and the peer-review process. The librarian's personal network successfully grew to 293 followers during the aforementioned period. In addition to providing reference service to researchers in the network, the librarian also elicited input from these researchers. ResearchGate members provided invaluable feedback in evaluating three existing LibGuides on bioinformatics, genetics, and genomics, as well as a new LibGuide on proteomics resources and tools.

This experience supports the use of online research networks for providing asynchronous biomedical reference. It also shows that online networks can be used for outreach to researchers and understanding their information needs and information-seeking behaviors. Indicators, such as the size of the librarian's personal ResearchGate network and high ResearchGate score, show that virtual reference service in a research environment can bring increased recognition and prestige to the librarian's work, which can then be leveraged in the offline library community.

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Online journal clubs using SharePoint in a clinical hospital setting

Submitted by Devica Ramjit Sundar, MLIS, AHIP; John Reynolds, MLIS; Baptist Health South Florida

The Medical Library at Baptist Health South Florida (BHSF) in

Miami serves 15,500 employees at 7 hospitals and 16 outpatient centers. The library team consists of 2 librarians and 3 support staff. Serving so many employees in so many places requires a robust online presence. In July 2011, the BHSF library began a pilot project creating an online virtual journal club. In hospitals, journal clubs can help promote evidence-based practice, improve the quality of patient care, encourage research, and foster an environment of shared learning. However, one of the major challenges inherent to journal clubs in hospitals is finding times for all participants to meet in person. Our attempt to overcome these limitations of time and location was to create an online space for nurses from the West Kendall Baptist Hospital Intensive Care Unit to share current research and discuss it.

With initial training from the hospital's information technology/office-automation team, the librarians used BHSF's existing Microsoft SharePoint software and Outlook email system to set up a team site with a discussion board and email alerts. Within that virtual space, members can read and write comments on articles at

times that are convenient for them. SharePoint is the basis for the organization's employee intranet and is typically used for project collaboration and document management. The format we chose is similar to posting to a social media site or online school discussion board, so it was immediately familiar to most of the nurses.

The process works as follows. A journal club member chooses a topic for each month's discussion and contacts the librarian. The librarian conducts a literature search and returns the search results for article selection. The library team checks the selection for copyright permission and posts a copy to the journal club website. This generates an automatic email that is sent to all members containing links to the article and the website. Members then read the article and go to the website to post their comments. Email summaries are also sent when comments are made on the discussion board.

During 2012, the service blossomed into 28 library-facilitated virtual journal clubs with 1,700 members. Journal club discussions have been used to develop ideas for research projects, discuss patient safety action plans,

implement evidence-based projects, prepare for accreditation inspections, and share new practice guidelines.

SharePoint's main limitation is that the club sites are not available from home due to hospital security restrictions. It was advantageous to use the software because it is part of the hospital's intranet and is funded and supported by the information technology department. An unanticipated challenge arose when some of the articles that were chosen for discussion were not covered by the hospital's copyright license, but writing to publishers or authors has been effective in almost every case.

As a result of adding virtual journal clubs to its service line, the BHSF medical library has increased its visibility throughout the organization, unified itself with the hospital's goal of shared governance, and furthered the department's importance in the delivery of evidence-based medicine.

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Contact Tomi Gunn at gunn@mlahq.org for
more information or with questions.