

Reinventing Science Librarianship: Posters on Display

Libraries were invited to contribute a poster for the Forum that showcases their organization's work in science librarianship. Fifteen libraries responded, providing 14 posters that will be on display on Thursday afternoon and Friday morning of the Forum. The contributions are described below in three categories: **Tools, Programs and Services**, and **Organizational Models**. Forum sponsors thank the library contacts listed below for their willingness to share their work and experience with the community.

Tools

Science Information Tutorial

University of California, Irvine

Familiarity with the scientific literature and the ability to evaluate sources of scientific information are important goals of science education. College science students must learn to identify information needs, search and locate information, and evaluate sources. Many students arrive at college without experience with primary scientific literature, and introductory courses may leave students confused about scientific literature and information sources. We describe a Web-based science information literacy tutorial that introduces undergraduate science majors to basic concepts of scientific literature. The tutorial introduces concepts, vocabulary and resources necessary for understanding and accessing information. In addition, the tutorial highlights ways in which information seeking in the sciences is different from information seeking in the humanities and social sciences. The tutorial content is based on the Association of College and Research Libraries Information Literacy Competency Standards for Higher Education and the Information Literacy Standards for Science and Engineering/Technology. In order to engage students in a Web 2.0 world, the tutorial is evolving to incorporate an interactive, game-like structure. User data will be tracked and user surveys will be used to assess efficacy of the tutorial in introducing students to basic concepts of using scientific literature. The tutorial can be viewed at http://www.lib.uci.edu/services/tutorials/science_info_tutorial/tutorial.html

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GatorScholar: Integrating UF's Expertise Online

University of Florida

The University of Florida (UF) is a large, land-grant institution with interdisciplinary research conducted in many departments, centers, and institutes across the state. Despite its wide range of

accomplishments, UF lacks a central location where faculty and department information, course information, research interests, publications, grants, links to university Web pages, and full-text articles can be displayed to the UF community, the public, and to potential students.

The UF Libraries is addressing this need with the development of GatorScholar, an open, keyword searchable Web site where information on UF's faculty, research initiatives, publishing output, and facilities can be explored. Built on Cornell's VIVO database software, the current pilot of GatorScholar focuses upon the agriculture, science, and engineering departments. The database currently contains 1723 faculty profiles, 35 departments, 66 research centers, and 2356 publications.

This Web site is an exciting opportunity for the UF Libraries to strengthen relationships with researchers and departments, highlighting the role of the library as the central focal point for all research activities of the university. Advantages to departments include aiding in the recruitment of new graduate students, postdocs, and faculty, and increasing the visibility of UF's publication output by supplying links to full-text within databases and to the UF Institutional Repository.

Administrators will benefit from the opportunity to compile lists of researchers who are working in a particular field, association members, and award recipients.

Eventually we plan to expand beyond the science community and include data from the health sciences, social sciences, art and humanities, and, potentially, law. We envision a future interface with easy editing capabilities for faculty and the ability to output data necessary for tenure and promotion reporting. Another goal is to incorporate a feed option where GatorScholar participants can receive periodical updates of campus events, seminars, and new grants and publications that match their profile.

This poster will present the primary reasons for implementation, an overview of the interface and what the directory provides, the steps taken to get the project off the ground, and the future directions we hope to take.

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Knowledge Management Tools and Services

University of Illinois at Urbana-Champaign

The University of Illinois at Urbana-Champaign Library has developed a set of complementary knowledge management tools and services that allow science and engineering librarians to be more integrally involved in the end-to-end aspects of knowledge creation and to extend partnerships with subject domain researchers.

Two of the applications, the Summary of Engineering Research and the BibApp software, assist in the management and analysis of scientific scholarly output and allow the Library to better understand emerging research fronts and communities. The Summary of Engineering Research (SER) is produced in conjunction with the Illinois College of Engineering and BibApp is being developed in collaboration

with the University of Wisconsin—Madison Library. Both of these systems serve as an institutional bibliography or citation repository software system. The SER contains information on all COE faculty journal and conference publications, books and book chapters, grant and contract projects, awards, theses and dissertations supervised, and patents awarded. BibApp allows capture of citations, basic authority control for author names, analysis of citations according to publisher policies on archiving, and straightforward population of an institutional repository where a publisher .pdf can be deposited. Both systems produce subject category tag clouds across individual departments and a social network graph showing faculty collaborations within and across departments.

The Library is also pursuing specific projects that support research and instruction by faculty utilizing computational methods and technologies. The Library has created a custom Digital Object Identifier (DOI) Locator which provides a one-step process for identifying and extracting an article or conference paper DOI from the CrossRef database. The Library has also developed software modules that identify, extract, and insert DOIs into researcher supplied EndNote files.

The Library has also developed a custom metasearch application that allows the searcher to limit search results to a set of computational science specific descriptors and controlled language terms.

Using data from the SER, the Library has developed mechanisms for generating Web-based personalized information access profiles for individual faculty. The profiling system extracts key subject and research interests for individual faculty from data in the SER. Using these identified subject terms, an individual profile Web page containing on-page-load links to Google News and pre-constructed metasearch queries is generated for an individual faculty member. In addition, these personalized pages contain linkouts to citation databases from faculty publication lists. The system provides a custom search and discovery tool that saves the researcher time and effort in identifying and staying abreast of the literature.

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RUAnalytic

Rutgers University

RUAnalytic is a tool to create analytic resources related to resources in the Rutgers Community Repository (RUCore). The tool fosters collaboration, interactivity and moves the repository to the next level--from preservation and access to enabling individual and collaborative research by faculty and staff. RUAnalytic creates analytic objects associated with digital resources that enable researchers to structure and browse resources based on domain-specific concepts and taxonomies. Researchers can group resources into research projects and apply tools (statistical analysis, GIS, and graphing/ visualization) to aggregated resources. Researchers may keep the analytic private or share with others, which enables users to discover and use multidisciplinary analyses of RUCore resources. The next generation repository enables collaboration, research and the discovery of innovative concepts

and scientific breakthroughs. RUAnalytic is RUcore's first step toward "repository 2.0"--the research repository.

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Outreach Connections: Native Health Information: A Wiki as Collaborative Space for Health Information Promotion and Training

University of Washington

This poster presents Outreach Connections, a wiki that serves as a new collaborative space for librarians, researchers, and public health professionals. Designed for those who work with health care providers serving Native peoples and with Native health information consumers, this wiki serves as a home on the Web for descriptions and stories about health information outreach and education activities. Outreach Connections complements, and does not duplicate, existing collections of information for Native peoples about how to manage personal health or treat health problems. Outreach Connections is an outcome of the Native American Health Information Services in the United States conference and was developed at the University of New Mexico Health Sciences Library and Informatics Center, with the support of a national steering committee drawn from the arenas of tribal public health, health librarianship, and information technology. This work has been funded in whole or in part with Federal funds from the National Library of Medicine, National Institutes of Health, Department of Health and Human Services under Contract No. NO1-LM-6-3504.

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Programs and Services

Librarian in the Lobby: Engaging Engineering and Physics Faculty in Their Space

Brown University

Innovation in science librarianship is not just technology driven. Indeed as science and engineering faculty, students, and staff depend on online resources, subscription and free Web, the human factor appears to be marginalized. At Brown University Library we have reinvigorated the connection between the science, engineering, and medical communities and their librarians. Librarian in the Lobby is a program that places the librarian for physics and engineering in the lobby of the building where members of those communities are based.

The program was piloted April 2005. The location was a high traffic area with main access points to offices, labs, and lecture halls and rooms, comfortable seating, and a coffee cart. The reason for each contact was logged along with, whenever possible, name, status, and department affiliation. Most of the contacts involved marketing the service to people who stopped for a cookie. After 15 hours (2 hrs/wk), the data showed that 41% of the 51 identified contacts were with faculty and included an opportunity to teach a class. So, one potential of the program was building relationships with faculty. Consequently, since the fall of 2006, LIL has been more than an onsite reference desk. It is an opportunity for librarian-faculty interaction that leads to invitations to departmental activities, collaboration in conducting classes, and sharing of information about each other's work and background. Requests for resources can be discussed and students' questions can be fielded.

The poster particularly illustrates the data from spring semesters 2006 and 2007. The desk was set up for 2 hours on two days each week. The timing captured traffic from classes, lunch, and afternoon seminars. Contacts were logged with the same codes from the pilot. In addition, a substantive contact designation was developed to group together the following reasons for contact: discussions, for example, about collection development; reference/research point-of-need services including follow-up; invitations to teach a class. A casual greeting (a friendly, attentive face) and marketing LIL to a new person were not substantive in this analysis. It is evident that, as hours have been added, substantive contacts with the physics and engineering faculty have grown. Librarian in the Lobby is a successful model for engaging with users, especially faculty, in the physical sciences and engineering disciplines in a highly visible part of their space.

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Transforming Curriculum: The Embedded Science Librarian

University of Guelph

Excellence in undergraduate science education is critical to the future of science. It is during these early years that students develop the foundational knowledge, skills and attitudes necessary for their future success. It is also a time when naïve enthusiasm for a career in science can blossom into a passionate commitment to a life of discovery—or wither and die. Administrators, curriculum developers and researchers in Higher Education, cognizant of the need to rethink science education, are responding to the challenge.

At the University of Guelph (Canada), academic renewal is occurring at all levels. The institution has identified ten core learning objectives for all academic programs that have set the stage for campus-wide reform. These objectives focus on being deliberate about fostering the development of thinking skills, attitudes and approaches to lifelong learning that complement the usual, discipline-specific knowledge and skill objectives (e.g. critical thinking, problem solving, information literacy, numeracy, integrity, etc.).

These institutional objectives have inspired a major review of first year science education within the College of Physical and Engineering Sciences (CPES), and a fresh approach to the development of their newly-introduced, four-year B.Sc. program in Nanoscience.

Recognizing the need for additional expertise in student learning and skills development, the scientists responsible for designing the introductory course for the nanoscience program welcomed the CPES Science Librarian to their team. As the specialist in Information Literacy training, and liaison to the other experts in the Library's "Learning Commons," the "librarian-consultant" plays a central role in weaving these skills into the curriculum—both as co-designer of the course and a member of the teaching team.

In this poster, the author illustrates the evolution of library involvement in undergraduate education from (1) the traditional professor-centered approach, where complementary skills training offered by the Library/Learning Commons is supplemental to the curriculum, through the (2) integration of skills training into the curriculum in the form of stand-alone sessions, to a (3) transformed approach, in which the science librarian is integral to the curriculum development team, and complementary skills training is intimately woven into (and throughout) the course. She describes key system requirements and librarian attributes that are necessary for this model to be successful.

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A Partnership in Education: UNC Science Libraries and the UNC-BEST Program

University of North Carolina at Chapel Hill

The UNC Baccalaureate Education in Science and Teaching Program (UNC-BEST) encourages undergraduate science majors to pursue a career in teaching. By enrolling in the program, students will attain their teaching licenses along with their science degrees, without needing additional graduate studies. Currently, the UNC School of Education is working with the Department of Biology and the Department of Astronomy and Physics to offer UNC-BEST to those students. Planning is already underway to expand the program to include Mathematics, Geological Sciences, and Chemistry students.

This program creates a bridge for science majors to become teachers, while also supporting practicing teachers across the state. The Science Librarians at UNC have an integral role: meeting with professors, creating course pages and online tutorials for students, and designing Web sites for the distribution of teaching materials. Within the program, BEST students will develop a wealth of instructional resources—including lesson plans, content outlines, and high school appropriate readings. It will be the job of the Science Librarians to make this valuable information available to everyone, especially current teachers throughout the state, who may not have had the benefit of such a program. All the course materials, including scientific data (to be used in classrooms), will be housed in a single digital collection, organized by topic and grade level. Students in the program will be able to use the Undergraduate Library's Digital Media Lab to record their student teaching sessions. This will enhance both their learning and their teaching portfolios. Ultimately, if this collaboration is successful, it has the potential for expansion into other departments and the university library.

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A Case Study in the Evolution of Digital Services for Science and Engineering Libraries *University of Virginia*

For the past several years, the Research Computing Lab, located in the Charles L. Brown Science and Engineering Library, has provided support services to the University of Virginia science and engineering community. This non-traditional library services unit was created in response to changing methods in science and engineering research and instruction. In order to meet these changing needs, the Research Computing Lab aims to provide seamless information services....ranging from the identification and acquisition of information and data to the complex analysis and modeling of these sets. The staff brings a traditional full-service library public services approach, paired with the technical depth that is critical to success in today's science and engineering environment. In the first two years, day-to-day support activity has grown tremendously and with increasing complexity. Additionally, the staff has become increasingly involved in longer-term consultation and training with students, faculty and researchers. These consultations range from serving as technical experts for a class of students working on complex data projects to multi-year consultations with faculty and departments who are aiming to preserve, use, and add to decades of data (both analog and digital). The multi-faceted nature of science and engineering research and instruction today demands these new capabilities among librarians. The Research Computing Lab is making those capabilities a reality.

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Organizational Models

The Library as Place in Emory University's Growing Science Commons *Emory University*

Staff in Emory University's Math & Science Center Library and Chemistry Library are rethinking the role the library can play in the sciences today. In spring 2009, departments in physics, psychology, chemistry, informatics, math, computer science, and environmental studies will find themselves neighbors. In one-on-one interviews, surveys, and focus groups of faculty and students, the library heard an overwhelming need for help encouraging and supporting collaborative, interdisciplinary research. Thus, over the past 18 months we have started a phased approach in implementing and

testing new facilities and services spread throughout 3 libraries. By 2011, when our new Science Library is completed, we expect to have created a very different concept of a library - one that embraces scientific visualization tools, technology, and collaborative research and one that is complemented by librarians who can support interdisciplinary communication and research needs.

The poster will include highlights on:

- New library partnerships
- Data services and visualization
- Technology for collaboration
- Library floor plans and pictures
- Assessment and input from faculty and students

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Working Towards the Informationist: A Strategy for Meeting the Challenges of eScience

Johns Hopkins University Welch Medical Library

William H. Welch Medical Library at Johns Hopkins University has been working towards the informationist model since launching its Liaison Librarian program in 2000. Within the liaison program, each librarian's goal is to become embedded within his or her assigned clinical, public health or basic science departments within The Johns Hopkins Medical Institutions. By fostering close relationships with faculty and staff, librarians learn each department's specialized language, literature, mission, priorities, objectives and workflow. By delivering services directly to clinicians and researchers wherever they are, librarians operate as departmental information experts who provides a continuum of services, from brief, highly focused information searching to in-depth research collaboration, all at the point of need. This poster shows example projects representative of our embedding progress.

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Defining New Roles: Collaboration and Engagement

University of Kentucky

At the University of Kentucky Libraries-Medical Center Library, a collaborative partnership has been formed between the Medical Center Library (MCL) and our College of Public Health (CPH) that defines an emergent model for the future of health sciences libraries. The project objective is to disseminate information about the Public Health Systems & Services Research (PHSSR) subset of the Health Services/Sciences Research Resources (HSRR) database maintained by the National Library of Medicine (NLM) and facilitate utilization of this resource by PHSSR researchers and librarians.

The CPH embarked on a project to collect and disseminate data resources to public health researchers by developing a PHSSR subset of the HSRR database. A medical librarian partnered with the CPH to expand access to and utilization of a public repository for PHSSR-related data. Project funding is provided by the Robert Wood Johnson Foundation (RWJF) and the NLM. The medical librarian is integrated into the project team and will determine appropriate MeSH terms, keywords, and search strategies that identify content for inclusion in the NLM HSRR database. Using the PubMed MyNCBI tool, an alert was created to track the literature for possible datasets. Increasing the awareness of the existence of PHSSR resources is the optimal goal of the project. The medical librarian, along with a graduate library science student, is responsible for maintaining the PHSR subset of the HSRR database housed at the NLM. Further, they serve as the bridge to the NLM by communicating and collaborating on issues related to the project. In an effort to engage the PHSSR researchers in using these available resources, a mini-grant program and an annual meeting will be supported to showcase the work of public health systems researchers. The medical librarian will strive to grow this new field of public health by networking with other public health librarians and promoting public health systems and services research.

Unique to this project, the medical librarian is embedded into the Center for Public Health Systems and Services Research and spends a percentage of time at the CPH participating at all levels. This involves going outside the library to “touchdown” and serve as part of the project team. A distribution of effort for the medical librarian has been determined and is funded by the CPH. Moreover, both the RWJF and the NLM recognize the importance and significance of the libraries’ contribution to the success of this project. A library and information science graduate assistant is funded to work directly with the medical librarian. This is an innovative example of how libraries and librarians are finding new roles to serve in the changing environment of today. It promotes collaboration and engagement with science researchers and may be viewed as a model for the future as the information science landscape evolves. The collaboration and engagement between the Medical Center Library, College of Public Health, and the School of Library and Information Science is proving successful and making a positive impact.

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Charting a Course for E-Science Support in the University of Minnesota Libraries

University of Minnesota

Advances in research computing have enabled scientists to span disciplinary and institutional boundaries in an accelerated pursuit of new knowledge. For leading universities and research institutions, research computing has become a high priority, with access to robust and well-integrated cyberinfrastructure¹ seen as a key factor in securing research funding and attracting and retaining

¹ The University of Minnesota’s Research Cyberinfrastructure Alliance has adopted the following working definition: *Cyberinfrastructure* includes the instruments, sensors, high performance computational systems, massive storage systems, data resources, and visualization facilities, tied together by high speed networks and made to work together by advanced software to accomplish goals that would not be possible by any single information technology system. It also includes the people, processes, training, security, policies, and capabilities to sustain the systems and networks over time.

top faculty and students. As the technological capacities of research computing re-shape the work of scientists, what transformations must research libraries make to meet their emerging information and management needs?

In the context of the University of Minnesota's newly formed Research Cyberinfrastructure Alliance, and the emergence of several large-scale data- and computationally-intensive University initiatives (including GIS), the Libraries have established the E-Science and Data Services Collaborative to chart this new course. The Collaborative's mission is five-fold: 1) to assess what is needed to support e-science and data services, determine capacity gaps (both within the Libraries and at the University), and seek out opportunities to develop necessary expertise including data collections and curation, data preservation and stewardship, data policies and virtual organizations; 2) to define the Libraries' core services and areas of expertise in "data services" in context of the RCA and other campus services; 3) to build knowledge and capacity within the Libraries to support e-science and data services; 4) to define a potential new model for library liaison roles across campus that supports interdisciplinary science (including relevant social sciences); and 5) to contribute to University discussions about interdisciplinary research and teaching and to develop a framework for educating campus about data policies including those that support open data initiatives.

This poster session presents the early work of the Collaborative in the context and dynamics of the institution's Research Cyberinfrastructure Alliance. Case studies are summarized to identify areas of significant need for services and support. Multiple potential investment domains of the Collaborative and the Alliance are outlined. Scientists' and administrators' perceptions of the library's role in a virtual organization of cyberinfrastructure support and information technology services are explored.

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"Where's ALL the Money Go?" Engaging Science and Engineering Students in Scholarly Communication and the Economics of Information

Syracuse University and North Carolina State University

This poster highlights instructional strategies to engage science and engineering students in understanding how scholarly communication and economics shape access to scientific information. Although considerable attention is currently being given to helping researchers and graduate students understand the serials crisis and open access, our experience indicates that there a number of reasons to open conversation to these same topics with undergraduates as well.

A significant challenge in information literacy instruction for science students, particularly undergraduates, is helping them to understand how searching library subscription-based resources relates to and complements searching Google. This effort is often misconstrued (by students, instructors, and librarians alike) as a scholarly/non-scholarly dichotomy when clearly much scholarly scientific information can be discovered freely via Google. A better way of addressing the problem is

to help students understand why certain scientific information is free to the public, but at the same time other vast amounts of scientific documents are not – and why this second set must largely be discovered and then accessed via research libraries.

Teaching students about academic publishing enables them to see that valuable information frequently comes at a price, the role libraries play as gateways to expensive information, and how economics affects the technologies that provide access both to the free Internet (i.e. Google, Google Scholar) and to library subscription-based resources. Many students today are tomorrow's researchers. Introducing them to the economic realities of scientific publishing opens the door for them to understand and participate in the open access movement.

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