

HYPOTHESIS

THE NEWSLETTER OF THE RESEARCH SECTION OF MLA

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The Newsletter of the Research
Section of MLA
VOLUME 16, Number 3
Fall 2002

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The Campbell Collaboration: Preparing, maintaining, and promoting the accessibility of systematic reviews of the effects of social and educational policies and practices

— submitted by Elizabeth Schneider

The title of this article, admittedly a long one, introduces the name and mission of the Cochrane Collaboration's younger sibling in the Social Sciences. The two share much in common and this article will present a brief history and overview of the Campbell Collaboration and its relationship to its predecessor.

Both Collaborations are named after leaders in their fields who recognized the critical need to make decisions and interventions based on evidence. The late Archie Cochrane, a highly respected epidemiologist, criticized physicians for ignoring scientific evidence in favor of medical school teaching, personal experiences or anecdotes, saying such a choice resulted in unnecessary death and suffering for patients. In 1993, the Cochrane Collaboration was established with the purpose of conducting systematic reviews of the evidence of what works and does not work in the practice of medicine.

Founded in 1999 and formally established in 2000, the Campbell Collaboration is named for the late Donald T. Campbell, an influential psychologist and evaluation theorist. Campbell called for an "experimenting society" and emphasized the need for society to rigorously assess the effects of social policies and practices.¹ He is credited with guiding the development of social experimentation into a mature and respected methodology.²

The seed for the creation of the Campbell Collaboration was planted in 1998 when Iain Chambers, a founder and director of the Cochrane Collaboration, approached Robert Boruch of the University of Pennsylvania. The medical group realized that some of the research that was useful to physicians fell within the social sciences. Boruch, a world expert on randomized field experiments for planning and evaluating interventions in the social sector, saw this as an opportunity to rationalize social policy decisions. "I had sufficient interest in investing all of my leisure time—and time stolen from other things".³ Just as randomized clinical trials are the gold standard for Cochrane systematic reviews, randomized field experiments are the gold standard for the Campbell systematic reviews.

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HYPOTHESIS. The Newsletter of the Research Section of MLA

<http://gain.mercer.edu/mla/research/hypothesis.html>

HYPOTHESIS (ISSN 1093-5665) is the official newsletter of the Research Section of MLA. It is published three times a year by the Section: Spring (March), Summer (July/August), and Fall (November). It is also available at: <http://gain.mercer.edu/mla/research/hypothesis.html>

Items to be included should be sent to the Editor by the 15th of the preceding month (i.e., February 15th for Spring, June 15th for Summer, October 15th for Fall). Copy is preferred by e-mail, but will be accepted in other formats.

HYPOTHESIS is selectively indexed in the *Cumulative Index to Nursing and Allied Health Literature* and the *CINAHL* database. Copyright 2002. All rights reserved.

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International Research Reviews

— submitted by Anne Brice

The provision of digital library services has been eagerly embraced by library and information professionals, with motivations ranging from the genuine desire to help users navigate and interpret the information landscape, to those more vicariously driven by the desire to keep pace with the technological bandwagon at all costs. Our understanding of design principles or usability evaluations, and our ability to contribute to and apply the research base has been less apparent, especially when the special

needs of particular groups of users are being addressed. Assumptions can be made, notwithstanding concerns about access to hardware, that the electronic medium provides an egalitarian mechanism for opening up access to resources for all. The study described below raises some important issues, and contains some key messages for us as information architects, intermediaries and advocates.

Non-Visual access to the digital library: The use of digital library interfaces by blind and visually impaired people

by Peter Brophy and Jenny Craven

OBJECTIVES

The objectives of the Resource funded Non-Visual Access to the Digital Library (NoVA) project (2000 - 2002) were to increase understanding of the retrieval of information by blind and visually impaired people, looking in particular at serial searching in non-serial digital library environments. The study investigated and compared approaches to information searching behaviour in order to report on findings and make recommendations for the design of digital library systems.

SAMPLE AND SETTING

A purposive sample of 20 sighted and 20 blind and visually impaired people was used. The term 'visually impaired' was defined as people who needed to use assistive technology, or had to be very close to the screen to be able to 'read' it. Tasks were set using four web-based resources. Each resource displayed elements of parallelism in their design and the tasks were consistently set so that comparative analysis could take place between the sighted and visually impaired users.

METHODS

Each step of the search process (i.e. keystrokes or mouse clicks) was logged using a combination of on-screen data capture (Lotus ScreenCam), sound recording and note taking. The use of sound recording was to provide a more qualitative approach to transaction logging in an attempt to ascertain not only **what** the user had done, but also **why**, and **how** they felt about it.

Semi-structured interviews were conducted to provide data on emotion, feelings and experience. These comprised **general questions**, such as how to tell a page is loading, initial comments about the interfaces and the type of information provided; and **usability questions**, such as their experience in finding resources required, correcting errors, knowing where to input information, and online help facility.

Data logged from the searches and the pre- and post-task interviews was entered into the Atlas.ti software analysis tool. This enabled comparative analysis of information searching behaviour in non-serial environments by the sighted and visually impaired samples.

RESULTS

Overall, visually impaired users took more steps per task - using around 16 different keystrokes or mouse clicks compared to sighted users who used the same 6 keystrokes or mouse clicks, although times varied depending on the design of the site. This shows that a visually impaired user may have to spend more time navigating around each page, especially if, for example, the page contains a lot of information or has many links.

Increasingly, web pages are designed to be searched in a non-serial or parallel way (i.e. using frames or randomly placed links). This makes the navigation process considerably longer for people using screen readers as the technology often forces them to search in a linear or serial way. Those using screen reading technology therefore tended to find searching the web much harder than those who had some sight and could use screen magnification or read a screen at close proximity.

Observations revealed that although people using the latest versions of assistive technology were offered navigational shortcuts to speed up the search and browsing process, not everyone had access to the latest technologies - designers need to be made aware of this. Those with more experience with the assistive technology they were using were often more successful with the task, therefore a greater emphasis needs to be placed on training in the use of assistive technologies.

CONCLUSIONS AND RECOMMENDATIONS

Although awareness of web accessibility is increasing, results show that visually impaired users are still faced

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(Campbell Collaboration — Continued from page 1)

The Campbell Collaboration today is an international, independent, non-profit organization that includes social scientists, statisticians and policy makers from 15 countries. Its aim is to bring together and evaluate the best available evidence for the effectiveness of various social interactions—to learn what works and does not work. In particular, it means evaluating evidence from experiments, then translating those results into recommendations for public officials, educators, police agencies, social workers, and the general public.

The Campbell Collaboration will create, update and disseminate systematic reviews in three major areas: crime and justice, education and social welfare. These three areas have relevance to healthcare providers, planners and policymakers because improving education, reducing crime and preventing abuse and neglect can all contribute to better health. Thus, members of the Campbell Collaboration worked with their colleagues in the Cochrane Group to produce evidence from systematic reviews of research relevant to implementing the ‘wider public health’ agenda of the U.K. government’s white paper *Saving Lives: Our Healthier Nation* (www.york.ac.uk/inst/crd/wph.htm)⁴

At the heart of the Campbell Collaboration are its methods groups whose role is to ensure that reviewers use rigorous methods of research synthesis and to improve the quality of primary research and research synthesis in the social and political sciences. Currently, three methods groups exist, with others expected to follow. There is one for experimental methods, one for quasi-experimental methods, and a third working on process and qualitative methods.⁵ Since this audience is well acquainted with the Cochrane systematic reviews, details on the “what and how” of the Campbell systematic reviews are not included here. However, such information can be found in the Viadero¹ and Petrosino⁶ references.

Background reading for writing this article uncovered some telling examples of decisions and policies made in the social sciences without the benefit of experimental evidence to support them. One such example is the “whole language” approach to reading that swept English-speaking countries during the 1970’s and 1980’s. The whole-language theory holds that children learn to read best by absorbing contextual clues from the text, not by breaking words into their component parts and reassembling them (the phonics method). Unfortunately, educational theorists who pushed this theory so successfully did not wait for evidence from randomized controlled trials before advancing their aims. If they had, they may have concluded, as did an analysis of 52 randomized controlled trials carried out by the U.S. National Reading Panel in 2000, that effective reading instruction requires phonics. Carol Fitz-Gibbon, a Campbell Collaboration participant uses this example to point out that the government requires drug companies to demonstrate the safety and effectiveness of new drugs before they can

be used on people, yet it does not hold itself to the same standard. This is indeed unfortunate because school education amounts to about 15,000 hours of compulsory treatment.⁷

The evidence-based policy movement does have its detractors. Many object on ethical grounds to the idea of withholding from half of a population the benefits of a new program or service. But the response to that is to ask for evidence that the intervention in question is not in itself harmful. For example, who would object to driver education programs offered in school? Well, three different studies of a total of about 15,000 students have shown that such programs are likely to increase road deaths. Why? Because these training programs, while not producing significantly safer drivers, cause young people to get their licenses at an earlier age. More young drivers mean more accidents.⁸

The first systematic review completed by the Campbell Collaboration was an analysis of the popular “scared straight” programs that expose juvenile delinquents to prison inmates who talk about prison conditions in harsh, or at least, realistic terms. The theory is that this exposure to the grim realities of prison life will deter at-risk youth from future crime. Do they work? Meta-analysis done on the combined results on seven randomized studies of scared-straight programs strongly suggests that these programs substantially increase the probability of subsequent arrests among participants. Not only are these programs harmful to participants, but also put the rest of society at greater risk of crime.

It was after reading about the Scared Straight review that the author visited the Campbell Collaboration web site (<http://www.campbellcollaboration.org/index.html>) — and was initially confused and disappointed. After hunting all over this site for the review, she came up empty-handed. In an email communication with Dr. Dorothy de Moya, Executive Officer, Campbell Collaboration Secretariat, she learned that the review is not yet available.

“Presently, several reviews in Crime and Justice, Education and Social Welfare are in the pipeline. Campbell systematic reviews go through a rigorous process and take anywhere from 6-20 months to complete. Campbell reviewers are drawing from Campbell’s rich database (C2 SPECTR) a registry of over 10,000 randomized and possibly randomized trials in education, social work and welfare, and criminal justice. As soon as these reviews are completed, they will be published on the Campbell web site. Anthony Petrosino’s review on Scared Straight is our first review which is in the final stage of approval.”⁹

The author did find the Scared Straight protocol on the web site for the Crime and Justice Coordinating Group (<http://www.aic.gov.au/campbellcj/reviews/>). Dr. de

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Chapter Research Committees Report

— submitted by Martha Earl

MAC Chapter Capitalizes on New Research

The Mid-Atlantic Chapter/Medical Library Association members met from October 17 - 19, 2002 in Washington, DC with the theme, "Capitolizing on Our Legacy, 1952-2002." The conference web site listed twenty poster abstracts and eight contributed paper abstracts. Gabriel Rios, Claude Moore Health Sciences Library, University of Virginia, Charlottesville, served as Contributed Papers Coordinator, and Jane Borland, Mary Washington Hospital, Fredericksburg, Virginia, coordinated Contributed Posters.

Both Contributed Posters and Papers sessions provided a variety of interesting research initiatives in various stages. I have highlighted a selection of them. More details and the complete listing of abstracts and related presentations may be found at the MAC conference web site <http://www.cbil.vcu.edu/mac/events/2002/meeting.html>

Capturing the Big D\$: Dollars and Data

Beverly Murphy, Assistant Director, Marketing and Publications, **Richard A. Peterson**, Deputy Director, **Sarah Wardell**, Assistant Director, Information Technology Services, and **Patricia L. Thibodeau**, Associate Dean for Library Services, Duke University Medical Center Library, Durham, NC

During these tight fiscal times, many institutions are challenging the dollars in library budgets. As a result, libraries are faced with generating data that supports current and future funding. Unfortunately, new electronic services and easier authentication systems have made it more difficult for academic health centers to track use of resources. Gates counts, disparate e-resource figures, and circulation statistics do not reflect the use of electronic resources, which have become a large portion of today's library budget and services. When the Library was asked to justify its funding from the hospital, it was faced with the need to quickly generate data that reflected who was using the resources and for what purpose. The Library decided to use Web survey technology to reach its clientele and compile results. The next critical step was the design of the survey instrument, since questions had to produce the relevant data: who, why, what, and when. The survey also had to be brief enough that patrons would take the time to complete it. By clever marketing, the Library generated an overwhelming response rate of more than 2,600 replies in less than two weeks. The survey generated data that supported the Library's argument that the hospital's current level of funding should be retained. The poster describes the survey process, how the

Library generated its strong response rate, and the actual survey results.

"Capitolizing" on Evidence-Based Medicine (EBM) Expertise to Create a North Carolina EBM Education Center of Excellence

Sue Stigleman and **Linda Turner**, Mountain AHEC, Asheville, NC; **Connie Schardt**, Duke University, Durham, NC; **Janine Tillett**, Wake Forest University, Winston-Salem, NC; **Karen Crowell**, **Bob Ladd** and **Jill Mayer**, UNC-Chapel Hill, Chapel Hill, NC

North Carolina academic and AHEC librarians who teach formal EBM programs formed a team to create this virtual EBM Education Center of Excellence in 2000. The Center was based on the concept of "Centers of Excellence" outlined in the NC AHEC Library & Information Services Network 2001-2005 work plan.

This collection of evidence-based medicine (EBM) resources is intended for faculty, librarians, students and health care professionals interested in learning about EBM. A goal identified by the team is to make this site your preferred entry point when you wish to see what is new in EBM, learn EBM, teach EBM, find current EBM research, or find important EBM resources. Each member of the team is responsible for the content of a section and Bob Ladd provides Web design. Members provide quarterly content updates. This EBM site is one of many other information resources and centers of excellence that can be linked to from the NC AHEC Digital Library (<http://library.ncahec.net/>).

This poster will present an overview of the EBM Education site and discuss the challenges involved in its creation and maintenance. We will illustrate the tasks involved in a teamwork approach to creating an online educational site, including acquiring and integrating content, interface design, project coordination, and maintenance. Evidence-Based Medicine Education Center of Excellence [<http://www.hsl.unc.edu/ahec/ebmcoe/pages/index.htm>]

Web-based News Application Facilitates Marketing of Library Services

Kathleen B. Oliver, MLS, MPH, Associate Director for Communication and Liaison Services, **Caroline Zam**

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browicz, Senior Programmer/Analyst, Advanced Technology and Information Services, and **Brian Brown**, MLS, Communications Librarian, Welch Medical Library, Johns Hopkins University, Baltimore, MD

The network delivery of the Welch Library's collection and services has made it possible for Hopkins users to work from their clinics, offices, home and while they travel. As a consequence, fewer patrons come to the Library, and new strategies are required to communicate effectively with users. As one of a number of strategies to market the Library's services to a user population of 15,000, the communication services staff partnered with a programming analyst from the Library's technology group to develop a web-based news application. The application, built with ColdFusion, creates dynamically generated, database-driven web pages that extract timely news information for display on the Library's internet and intranet sites, and sends email to campus news outlets. Email functions of the application are programmed with contact addresses of four Hopkins news publications, broadcast email services of the Schools of Nursing, Medicine and Public Health, and contacts at other campus libraries. These targets can be modified as needed. The application makes it easy to tailor announcements and to quickly reach an audience appropriate to the news topic. An average of two news stories each week are posted to the Library's public internet and internal intranet sites, and transmitted by email to other news outlets. It has proven to be an efficient, effective, and flexible marketing and communication tool. This poster presentation will describe details of the technology behind the application, its impact on community exposure through specific media, and on library event attendance.

Rediscovering Document Delivery and Interlibrary Loan Workflow

Richard A. Peterson, AHIP, Deputy Director, **Eric Albright**, AHIP, Assistant Director, Information Services, **Virginia Carden**, AHIP, Librarian, Public Services, **Artura D. Goods**, Library Associate, **Rodney Hunter**, Senior Library Assistant, **Beverly Murphy**, AHIP, Assistant Director, Marketing and Publications, and **Vanessa Sellars**, Administrative Coordinator Duke University Medical Center Library, Durham, NC

The poster describes the departmental workflow-analysis process and the subsequent changes that were implemented. Data was collected using flow charts, time studies, hands on experience or observation, literature reviews and surveys. A task force was formed that included representatives of the Document Delivery/ILL, Administration, and Public Services Departments.

This project was designed to comprehensively address longstanding issues in the Document Delivery and ILL

Department, including the labor- and paper-intensive nature of the work, personnel and morale issues, and lack of clearly defined responsibilities. The project was broken down into the following components: data collection of our internal operation, investigation of workflow patterns at other sites, analysis of findings, design and implementation of revised workflow, and revised documentation of the departmental procedures, position descriptions, and performance standards.

The analysis of the flow charts indicated that the lower volume component of the service, document delivery and borrowing had significantly more complicated processes due to the greater number of decision points than the higher volume but less complicated lending service. Additional analysis identified areas that were the most labor intensive and unnecessarily paper-based, including record keeping, tracking of requests, accounting, and statistics. Time studies were conducted over the period of four weeks to calculate the processing time for all areas of the workflow. Based on this data, we were able to reallocate staff and percentages of time spent on their job duties. The surveys along with direct observation provided additional insight into problem workflow areas. Lastly, the use of multiple nonintegrated automated systems was eliminated by implementation of a comprehensive document delivery/interlibrary loan (ILL) management program and utilization of all its functions.

Administrative support, input from various levels, objective analysis of data, and creative problem solving worked together to successfully address numerous issues with the document delivery/ILL operation.

Informatics Instruction: Customized Information Retrieval for Residents

Sharon Easterby-Gannett, Medical/Systems Librarian, and **Ellen Justice**, Medical Reference Librarian, Christiana Care Health System, Newark, DE

This project was designed to assess the informatics skills of the third year residents in order to customize search training. This information is needed so that the third year residents, as Teaching Residents (TRs), can teach their colleagues the clinical topics, which arise during Medical Morning Report and other clinical interactions.

Each third-year Internal Medicine resident is required to serve as TR for a four-week block. The TRs present information to their colleagues in response to clinical questions arising throughout the block. The residents meet with medical librarians to learn searching techniques in the Medical Library's electronic databases and receive guidance on: database selection, locating full-text articles/chapters in e-books, and searching for evidence-based studies. The Librarians attend Medical Morning

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Report two days per week and meet with TRs on those days to discuss search strategies and techniques.

Pre-assessment of informatics skills of TRs is done to discover database and technology familiarity and customize literature search training. Pre-assessment and post-assessment is done using a Lickert scale questionnaire to ascertain the residents' own perceptions of their searching skills. An initial search is given to the TR during the first week of the block to help determine the baseline searching skill of each individual. This allows the Librarians to customize their informatics instruction to the individual's information searching needs. One-on-one interactions with a Medical Librarian give the resident personalized instruction targeted to his/her informatics needs. This also gives the Librarian an opportunity to observe improvement of the TR's searching techniques.

Real Time Testing of First Year Medical Students

Patricia Wilson, MIS, Laura Abate, MLS, Richard Billingsley, MLS, Michelle Bisturco, MLS, Alexandra Gomes, MLS, and Anne Linton, MA, Himmelfarb Health Sciences Library, The George Washington University School of Medicine, Washington, DC

For the past four years, The George Washington University School of Medicine has instituted a component of the Practice of Medicine (POM) course entitled Problem Based Learning (PBL). As an extension of the first and second year program, students are assigned a Library Liaison to work with the physician tutor and the PBL group to provide students with Medical Informatics instruction. The intent of the liaison program is to teach Medical Informatics skills such as medical database searching, resource evaluation, electronic resource use, ethics and copyright and using the Internet to find quality clinical information. The goal of the PBL course is to develop life long learning skills. As part of the program, the library was asked to organize and monitor the administration of a real time examination. The objective of this exam was to assess the student's ability to access current clinical information using electronic resources and to apply that information to a theoretical case, all within a limited time period. The timed examination scenario was created to permit the student to demonstrate his or her ability to utilize medical informatics skills in clinical practice. The poster will illustrate the organization and administration of the examination. It will discuss student response to this examination format, the successes in administering this type of examination and the lessons learned by the librarians and the PBL course directors.

Tablet PCs -- the next PDA?

Karen Crowell, Health Informatics Fellow, **Jennifer Curasi**, Computer Consultant, **Wallace McLendon**, Associate Director, Health Sciences Library, UNC-Chapel Hill, Chapel Hill, NC **Paul Dunn**, Clinical Associate Professor Family Medicine, UNC-Chapel Hill, Chapel Hill, NC

This poster will be divided into three sections: section 1 will depict the evolution of handheld devices in health-care; section 2 will include a chart comparing PDA and Tablet PC capabilities; and section 3 will summarize an assessment of Family Practice Center clinicians' use and attitudes toward PDAs and Tablet PCs. The survey will be designed to reveal information access differences in the two devices.

Within the Division of Health Affairs, our Health Sciences Library has taken an active role in PDA promotion and consulting. We have conducted usage surveys, taught classes on PDAs and content resources, consulted with various health science departments, sponsored forums, and held a mobile technology fair. In assessing our own PDA involvement, we have concluded that our being on the leading edge of mobile technology has opened doors for us in Health Affairs as well as bolstered our technology reputation. We have also concluded that this activity has brought us one step closer to providing information at the point of care. The recent introduction of Tablet PCs in our health affairs environment renews our commitment to early involvement in learning about a technology that may re-shape our information delivery.

Our Family Practice Center has recently experimented with ViewSonic Tablet PCs. We have interacted with clinicians at our Family Practice Center and representatives from ViewSonic. Our Family Practice Center has shared insights into the value of PDAs and Tablet PCs as both clinical and information tools. ViewSonic is interested in working with our library to explore our role in adding information value to this new technology. We will bring information from Family Practice Center participants, vendors (they have agreed to loan us units for demonstration at this poster session), and our librarians who will relate our PDA experience to preparing for the emergence of Tablet PCs.

Interactive Web Resource for Scientific and Scholarly Authors: An Opportunity to Shape the Publication and Use of Intellectual Property

Kathleen Burr Oliver, MSLIS, MPH, Associate Director for Communication and Liaison Services, **Brian Brown**, Communications Librarian, **Caroline Zambrowicz**, Sen-

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ior Programmer and Analyst Welch Medical Library, Johns Hopkins University, Baltimore, MD

The emerging electronic publishing environment creates new opportunities for scholars, scientists and universities to shape the publication and use of their intellectual property. Johns Hopkins libraries are currently working to heighten faculty awareness of publishing choices and the necessity to specifically negotiate with publishers for the right to share their scholarship on their web sites, and to distribute it for educational purposes. The University libraries are engaged in developing strategies to this end. In an effort to support and inform scholars of their publication choices, Johns Hopkins University libraries have developed an interactive web resource for authors. Using an Oracle database and ColdFusion software, this resource draws, initially, from the Welch Medical Library's database of electronic resources, ISI's citation reports (JCR) and library licensing costs, to offer authors data on impact factor, publisher, cost rank and other relevant information for the top science journals. The web-based chart permits authors to view journal data by discipline. Moreover, the resource will offer authors a mechanism to post comments on their publishing experience for review by colleagues. The comment mechanism is structured to offer elective anonymity, ensure authenticity, and elicit information from authors on their experience in securing from publishers the right to share their scholarly work with colleagues and students. This poster presentation will describe the development of the resource, strategies to publicize it, and offer preliminary results of its use by Johns Hopkins authors.

Implementing a Clinical PDA Program for Nursing Students

Francesca Allegri, Karen Crowell and Julia Shaw-Kokot, Health Sciences Library, The University of North Carolina at Chapel Hill, Chapel Hill, NC

Since February 2002, the School of Nursing and Health Sciences librarians have been involved in the introduction of personal digital assistants (PDAs) into the 14-month, BSN program at UNC at Chapel Hill. The goal of the project is to study PDAs as a means of (1) supporting a nursing student's learning in the clinical setting and (2) helping to establish the skills of information retrieval and utilization, essential for professional nursing practice and lifelong learning.

During the summer sessions, students were encouraged to get familiar with the PDA and required software applications. In the fall, students are expected to use PDAs in their clinical experiences. In the spring, PDAs will be used in two courses to track their clinical skills.

Librarians work with a team of faculty, students and staff in the School of Nursing to select required computer hardware and software based on quality and scope of content, usability, and price. A librarian leads the evaluation team and has designed a series of surveys to assess the role of PDAs in this program. A software application installed on the PDAs will monitor individual software use.

Librarians also participate in developing policies and procedures for (1) purchasing and installing hardware and software, (2) orienting students and faculty, and (3) providing technical support.

This project shows how librarians can become effective members of a subject specific team integrating PDAs into a curriculum. This presentation will cover the aspects of the project and the initial evaluation results.

Collecting User Preferences for Web-Based MEDLINE Training: A "Capitol" Idea

Andrea Horne, Kelly Near and Karen Grandage, Claude Moore Health Sciences Library, University of Virginia, Charlottesville, VA

Librarians have long realized the crucial role they play in information education at their institutions. The proliferation of electronic resources and new health-related databases has created a need for almost continual end-user training and support. At our academic medical library, we have a long tradition of classroom-based education, utilizing formats such as large group lectures and hands-on training for both curriculum-based and open enrollment courses. We recognized the need for instructional materials to be available outside the classroom, at any time, to serve the various information needs of busy health professionals and students. Advances in Web technology such as Flash, streaming audio and video, and frames enabled us to consider utilizing these methodologies in the delivery of instruction.

This paper will describe our endeavors to create three Ovid MEDLINE Web tutorials utilizing different technologies. They included: (1) a full, interactive tutorial created in web frames, with instructions to execute in a "live" version of the database; (2) a full tutorial consisting of streaming video and audio of an instructor interspersed with screen shots of the database; and (3) short, animated screen capture illustrations of commonly performed database tasks with an audio narrative. We will describe our experiences in testing the tutorials, evaluating our results, and draw conclusions for future efforts of instructional content delivery through Web-based formats.

LIS/TEN UP: Research News from the Groves of Academe

— submitted by Ellen Detlefsen, DLS

Resources for enhancing literature reviews and updating syllabi

A favorite trick of mine is to use "canned" PubMed/MEDLINE searches that others have constructed and made available publicly on the web. Even in situations when the context information may be old, these searches allow a user to go immediately to the latest indexed information on a topic, and then on to a "Related Articles" search, etc.

For example, the excellent MLA Medical Informatics Section's "Self-Education Resources Project," which was mounted by the Section in 1999 and last updated in November of 2001, may seem somewhat out of date with respect to the citations listed under each of its thirty-six different topics, BUT each of the thirty-six topics also contains a hotlink to a search of PubMed on the topic. It is an excellent resource that might be overlooked if one were to focus on the currency of the citations and not on the updating strategies which the site offers. These searches can be invaluable for the researcher seeking to do a literature review or a "state of the art/science" section in a research grant or paper.

For instance, if you go to that Medical Informatics Section website <<http://www.medinfo.mlanet.org/profdev/selfed.html#top>> and click on the topic of ETHICAL AND LEGAL ISSUES, you are given a citation to a classic book (Kenneth Goodman's *Ethics, computing and medicine: Informatics and the transformation of health care*. Cambridge University Press, 1998), and a pre-planned PubMed search link that opens a PubMed session that uses the strategy "information systems/lj[MeSH Terms]". You will locate at least forty-seven hits from the year 2002 alone, on topics such as the ethical conduct of research, standards for privacy, data security, etc.

If you go to that website's section on EVALUATION OF INFORMATION SYSTEMS, not only do you find a citation to Chuck Friedman's classic textbook, but clicking

on the PubMed search feature yields more than 200 hits for articles published in 2002 that may be useful in reviewing current thinking and activities in evaluation studies of all kinds.

Let the record show that these handy links are the handiwork of the Research Section's own member, the indefatigable Kristine Alpi, now at the Public Health Library of the New York City Department of Health and Mental Hygiene (and newly appointed to the *Hypothesis* Editorial Board). Under her careful webmastership, at least three other MLA sections—Medical Informatics, Medical Library Education, and Public Health/Health Administration—have benefited from her skill in constructing webpages and in creating PubMed hotlinks, so that her colleagues may stay current with the professional and medical literature.

A plea from the editors:

It was the hope of the column editor and the newsletter editor that this column of news and suggestions from the world of LIS education might also someday contain a registry of student projects currently underway or in progress. If you are a faculty member—tenure track, tenured, or adjunct, full-time or part-time, OR if you are a student in an LIS program at any level, and you are doing a research project—small or large—please send Ellen Detlefsen a note about the project so that we may all share in the ongoing research agenda of the LIS colleagues. She may be reached by email at ellen@mail.sis.pitt.edu

Masters' papers, doctoral dissertations, collaborative work with clinical colleagues, action research from the front lines—your LIS education research projects deserve a wider audience, and this column may be able to provide that audience.

(Non-Visual Access — Continued from page 3)

with usability problems when trying to navigate around web sites. Careful consideration must therefore be given to the layout and navigation of a site and to the performance of different assistive technologies. Success in navigation can also depend on experience with the assistive technology, which raises training issues both for users and trainers.

A report of the study will be available shortly, please contact Jenny Craven for further details.

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Evidence-Based Librarianship Levels of Evidence

— submitted by Jon Eldredge, MLS, PhD

Purpose

Evidence-Based Librarianship (EBL) seeks to ensure that we utilize the best and most relevant evidence when answering our most important questions. In so doing, EBL attempts to improve the librarianship and informatics field.

The new EBL Levels of Evidence table serves as a guide for distinguishing between the relative weights that should be assigned to different types of evidence. Most readers will recognize that the unifying logic of arranging evidence by levels relates to the better performance by the higher levels of evidence in reducing possible bias. This table should assist professionals in selecting the most appropriate forms of evidence in answering EBL questions, particularly when various evidence offers competing conclusions.

The Levels

The systematic review serves as the highest level of evidence for all three categories of research question. Cynthia Mulrow and Deborah Cook define systematic reviews as “concise summaries of the best available evidence that address sharply defined clinical questions.” In addition, systematic reviews use “explicit and rigorous

methods to identify, critically appraise, and synthesize relevant studies.”³ Although one can sometimes pool certain data of different studies identified for a systematic review into a meta-analysis, the two methods should not be confused with one another. For example, as few as two studies with compatible data sets can be combined in a meta-analysis, independent of the more comprehensive literature search and synthesis found in a systematic review.

Meta-analysis occupies the second highest level for the Prediction and Intervention categories. Such compatibility between data sets across studies most likely will never occur for the kinds of methods employed to answer Exploration questions, however. More creative forms of synthesizing Exploration forms of questions are required due to the lack of homogenous or compatible data sets. Many of these alternative methods for such synthesis can be found in the excellent work *Summing up: the science of reviewing research* by Richard J. Light, David B. Pillemer.⁴ This same book also might be useful for synthesizing multiple case studies or surveys in the Prediction and Intervention categories.

The third level for each category refers to single research studies. At this level the three types of questions diverge

(Continued on page 11)

Prediction	Intervention	Exploration
Systematic Review	Systematic Reviews	Systematic Reviews
Meta-analysis	Meta-analysis	Summing Up*
Retrospective Cohort study	RCTs	Qualitative studies**
Prospective Cohort study	Retrospective Cohort study	Survey
Survey	Prospective Cohort study	Case study
Case study	Survey	
	Case study	

* Please see the book *Summing Up* for a comprehensive overview of creative ways to synthesize Exploratory study data.

** Qualitative studies include but are not limited to focus groups, ethnographic studies, naturalistic observations, and historical analyses.

This table assumes that neither any publication bias¹ nor what Rosenthal refers to as the “File Drawer Problem”² has occurred when assembling relevant evidence.

(Levels of Evidence — Continued from page 10)

dramatically in the choice of the best possible single research design to answer their respective questions. Prediction questions are best answered by prospective cohort studies, followed next by retrospective cohort studies. The cohort design has been described in great detail elsewhere.⁵ Randomized Controlled Trials (RCTs) are experimental designs capable of greatly reducing bias. To this author's knowledge, no RCT has ever successfully answered either a Prediction or an Exploration form of question. The RCT has been used widely to answer Intervention questions effectively, though. Qualitative studies are varied according to the type of Exploration question and the resources available to the researcher. Surveys, case studies, and expert opinions all have serious threats from a variety of forms of bias so they occupy the lowest levels of evidence. Case studies and expert opinion have a particular tendency to collect and report selective information.

As noted elsewhere, a study representing the lower levels of evidence can control for bias to a certain extent. Conversely, higher levels of evidence research designs such as the RCT can be conducted shoddily. Thus, under somewhat rare circumstances, a lower level of evidence method such as a survey might be more appropriate than an RCT for answering an EBL question. Yet, assuming a minimum adherence to quality research methods protocol, the higher levels of evidence normally will do a better job of controlling for bias than evidence from the lower levels.⁶

Prediction Questions

Prediction questions and the studies employed to answer these questions typically seek to predict an outcome under similar circumstances. The classic single research design for answering such questions has been the cohort study. The cohort study design involves a defined population, an exposure to some phenomenon suspected of causing a change in the population, and observed outcomes. Examples of Prediction questions and the cohort studies used to answer these questions include information resources use, outreach, education, or PR/marketing studies. Two or more cohort studies can be strengthened via meta-analyses, provided they have compatible data. Systematic reviews can synthesize multiple cohort studies (or lower-level evidence in the Prediction category) at the highest level.

Some of the Prediction questions that the author has identified include:

At what rate does the volume of published English-language information resources in the health sciences grow per year?

Does consumer health information have a positive impact on the prevention of disease in currently well patients?

Which print journal subscriptions are best to retain in the collection when an electronic version is available?

Are students who have been taught information skills more or less likely to continue to further study?

What personality characteristics in librarians make them good or bad searchers?

Do library skills courses improve the information-seeking skills of students?

Do library desk staff members provide accurate responses to reference questions?

Intervention Questions

Intervention questions seek to compare different actions in terms of efficacy in attaining intended goals or outcomes. In answering an Intervention question investigators seek to determine if Action A is markedly better than Action B. Action A in this context might be an alternative way of performing an action in order to achieve a specified goal. In contrast, Action B might be simply the traditional way of achieving the same goal. Or, Action B might be the absence of an action, in some cases. Either Action A or Action B could be any sort of deliberate intervention intended to effect a change or provide a service: examples of Intervention questions could involve teaching, providing a reference service, maintaining collection resources, communications by liaison librarians, or weeding techniques. When individual studies can be synthesized via systematic reviews or their compatible data sets pooled, then higher levels of evidence can emerge.

Some of the Intervention questions that the author has identified include:

Which web pages on a library website are most usable?

Does weeding some classification ranges in a monographs collection result in higher usage than the unweeded, but otherwise similar ranges?

Do the benefits of a value-added resource such as Ovid databases outweigh the costs when compared to a free resource such as PubMed?

Which methods of teaching search skills result in clinicians searching for their own evidence in patient care?

Do medical students learn searching skills more effectively from librarians or teaching faculty?

Does face-to-face contact versus electronic-only contact with a teaching faculty member by a library liaison li-

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(Levels of Evidence — Continued from page 11)

brarian result in a more accurate perception of library services or resources?

Which approach is more effective in improving patient care, lowering costs, and ensuring satisfaction with library services: a clinical librarian working in a hospital-based capacity through attending rounds or through a library-based service to clinical customers?

Are librarians or are library technicians more effective at providing services such as answering reference questions or performing mediated literature searches?

Exploration Questions

Systematic reviews⁷ and other forms of synthesis described in works such as *Summing Up* occupy the two highest levels of evidence for Exploration studies.⁸ The qualitative design represents the highest form of single best research design for answering Exploration questions. Numerous Exploration questions in health sciences librarianship seem to begin typically with the word “why?” or imply a “why” inquiry. Examples of single studies for answering Exploration questions employed in health sciences librarianship include focus groups, ethnographic studies, naturalistic observations, In-depth interviewing, Delphi techniques, nominal group processes, and historical analyses. A range of qualitative methods available, although not all necessarily employed in our field, can be found in Marshall and Rossman’s book.⁹ Exploration questions have a greater tendency to have more open-ended orientations than Prediction or Intervention forms of questions. Exploration questions often require research designs with iterative, flexible, and non-sequential elements.¹⁰ Exploration questions also seem oriented toward the perspective of participants (e.g., library users) and often involve designs aimed at descriptive analyses and theory building.¹¹

Some of the Exploration questions that the author has identified include:

Why do potential users, who are presently non-users, not use their library?

Why do some people utilize reference services while others rarely or perhaps never utilize the same reference services, in spite of a recognized and shared need for information by all of these people?

How do users structure their search strategies in lieu of formal information skills training?

Why do some users prefer certain information resources over equally relevant information resources?

How do we know if a library program or service has been successful?

How does one measure effective searching skills?

Do librarians improve or worsen users’ perceptions of information overload?

How can we measure customer satisfaction with library services?

How do we measure the appropriateness of performance management tools in libraries?

Further Discussion

The author views the levels of evidence table in this article as part of an evolving concept. He invites a widespread dialogue on the utility of this framework, the validity of the exact placement of any type of evidence found in the specific hierarchy, and the possible inclusion of other types of questions. Regular *Hypothesis* readers might recognize that some of the illustrative questions listed above were taken from or derived loosely from an inventory of important EBL questions published in the Spring 2001 issue of this journal.¹² Participants in the author’s MLA CE course on EBL developed other questions listed. The author also developed a few questions independently. The author could not find any questions in this inventory, which when refined or clarified, that would not fit into the categories of Predictive, Intervention, or Exploratory. Other readers might reach different conclusions. Fortunately, such differences in opinion might lead to our profession identifying new major categories of questions, if such categories exist. This challenge might present an opportunity for critics of the previous levels of evidence table¹³ published in 2000 to articulate the limitations they might perceive in this new hierarchy of evidence. Thus, this table should be viewed as part of an evolutionary framework subject to further revision resulting from an extensive dialogue.

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(Continued on page 13)

(Campbell Collaboration — Continued from page 4)

Moya, in response to the author's remarks about the web site, stated that the site is brand new and they welcome comments and suggestions.

While the absence of any reviews on the site is disappointing, the impressive C2 SPECTR database (Social, Psychological, Educational, and Criminological Trials Register) is a powerful yet easy to use tool that you may want to try. Its main purpose is to support individuals writing systematic reviews. However, it is available to anyone who cares about the effects of social and educational programs and the Campbell Collaboration is dedicated to promoting its accessibility.

The few examples in this article demonstrate a compelling need for the social sciences, like the medical sciences, to conduct experimental research and systematically review the results of all available evidence to determine what works and does not work. The Campbell Collaboration is an impressive initiative with tremendous potential to change how social sciences research is conducted and implemented. While it may have little impact on some of our professional lives, it is hard to imagine the Campbell Collaboration not having impact, and a positive one at that, on our personal lives.

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(Levels of Evidence — Continued from page 12)

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Literature Review

—submitted by Ruth Fenske, Ph.D.

Dillon, Irma F. and Karla L. Hahn. Are Researchers Ready for the Electronic-Only Journal Collection? Results of a Survey at the University of Maryland. portal: Libraries and the Academy. 2(3):375-390, July, 2002.

Hahn, Karla L. and Lila A. Faulkner. Evaluative Usage-based Metrics for the Selection of E-journals. College & Research Libraries. 63(3):215-227, May, 2002.

Librarians at the University of Maryland have published two articles on electronic journals, a topic of interest to all of us.

All 2,975 faculty and 610 randomly selected graduate students received an e-mail message in the spring of 2001 inviting them to participate in a web-based survey on journal usage. The overall response rate was 36%, with 39% of faculty (and even more sci-tech faculty) and 32% of graduate students replying. Fifty-one percent of faculty and 61% of graduate students use the electronic version of a journal also available in print, at least monthly. Only 20% of graduate students and 31% of faculty never use the print version of an electronic journal. Seventy percent of faculty (68% of sci-tech faculty) and 51% of graduate students preferred that the most important journals in their field (core journals) be available in both print and electronic format. Image quality, layout, access to the full content, and access to back issues were faculty concerns with electronic journals. Remote access was a positive feature. Twenty percent of faculty and 25% of graduate students would be content with just electronic access to core journals only. When asked about journals less central to their work, 70% of faculty favored electronic access only and 7% favored both print and electronic access for even non-core titles. For subject focused libraries these results may point to an opportunity to cancel the print version of non-core journals. For general collections, presumably just about all journals are someone's core. However, duplication of print between main and branch libraries could be eliminated. Unfortunately not all results for each subgroup are given. Copies of the survey and cover letters are appended.

In the second article the authors develop ways to assess the value of electronic journals to which the library already has access and to evaluate potential electronic journals prior to purchase. For titles already "owned," they calculated the average cost of access to a full text article and the average cost per article. They also calculated something called content-adjusted usage which is the ratio of the number of accesses to the total number of arti-

cles available in that journal. Calculation of these figures depends on getting clear usage and content information from the vendors. In order to use their method for evaluating potential purchases, one has to identify a title or collection already in the collection, similar in terms of subject, audience, and use in print form. The average cost per article can be calculated. However, potential use must also be taken into account. Their "cost-based usage benchmark" determines how many uses a candidate journal would have to have in order to have the same average cost per access as the similar title already owned. The "content-based usage benchmark" is the number of accesses the potential purchase must have in order to have the same content-adjusted usage as the title already owned. Their third figure is the "cost per access at the content-based usage benchmark" which determines cost per access if content-adjusted usage of the candidate title were achieved. Their method for evaluating potential purchases appears to provide a way to determine how good a deal the potential purchase is in comparison to what a library has for a peer product. In some cases the data could be used to replace a product; in others, to get a better deal for a potential purchase. Although this article is not research per se, it does represent the same kind of thoughtful decision-making that sometimes is supported by research.

Gross, Melissa and Matthew L. Saxton. Integrating the Imposed Query into the Evaluation of Reference Service: A Dichotomous Analysis of User Ratings. Library & Information Science Research. 24(3):251-263, 2002.

Continuing her work on users seeking information on behalf of someone else, in this article Melissa Gross and a co-author look at differences in ratings of satisfaction with reference services at a public library between those asking a question for themselves and those asking on behalf of someone else. The authors performed a secondary analysis of 1,092 reference user surveys collected over a period of three weeks in thirteen public libraries in southern California. Twenty-five percent of the users surveyed were working on behalf of someone else. No significant differences were found between the two groups in terms of finding enough information and useful information. However, in general, of the seven questions asked, users rated the reference service lowest in terms of their finding everything they needed. There were no significant differences between the two groups in terms of frequency of library use and level of education. Users working on behalf of others were more satisfied with the reference service and the readiness to help, interest, understanding, and follow-up displayed by the reference librarian. Only half of each group were frequent users of the reference desk, with those working on behalf of others being more likely to be asking a reference question for the first time.

The authors believe the person doing his or her own work is in a "better position to be critical of the librarian's performance and less accepting of information that does not

exactly fit his or her own needs." The person working on behalf of someone else may not always fully understand the question and its context and may identify with the reference librarian who is similarly baffled. Health sciences librarians, who work where many questions are posed by one person for another person, should keep these findings in mind when conducting user surveys. The article could have been improved by putting the ANOVA and chi square results into tables.

Whitmire, Ethelene. Disciplinary Differences and Undergraduates' Information-Seeking Behavior. Journal of the American Society for Information Science and Technology. 53(8):631-638, June, 2002.

Using data from the 1996 College Student Experiences Questionnaire (CSEQ) and the Biglan model, frequently used in education research, Whitmire analyzed differences in undergraduates' information-seeking behavior. Data were collected from a sample of 5175 undergraduate students selected from 10,000 at thirty-eight four-year institutions. One section of the CSEQ asks how often the student has done each of ten actions concerning the library. The Biglan model classifies academic disciplines according to hard versus soft, pure versus applied, and life versus non-life. The latter has to do with the "degree of involvement with living or organic objects of study." Whitmire says "biology majors were excluded from this study because this subject area was not represented in the original Biglan typology." Examination of the original article shows that five areas of the biological sciences were included. Nursing also was not included, probably because the original Biglan schools did not offer nursing.

Independent t-tests were used to identify significant differences between the three pairs on each of ten measures. Of thirty t-tests performed, twenty-two showed significant differences between the two groups. Soft, pure, and life disciplines engaged in more frequent information-seeking behaviors. The social sciences fell into all three of the high activity groups and engineering belonged to none of the high activity groups. The authors conclude with a discussion of the implications of the findings for library services. They point out that this study covers in-library information-seeking behaviors only.

Biology would fall into hard, pure, and life, two of the three high activity groups. Nursing would be applied, life, and probably soft. It would be interesting to try to develop a Biglan type typology for faculty and all types of students in the health sciences and to test it in both the remote access and in-library contexts.

In this study, results of tests of significance are incorporated into the charts; however, one has to use a ruler to line up each result with the relevant question.

Southon, F.C. Gray, Ross J. Todd, and Megan Senecque. Knowledge Management in Three Organizations: An Exploratory Study. Journal of the Ameri-

can Society for Information Science and Technology. 53(12):1047-1059, October, 2002.

Three Australian information scientists used what they call a multiple case study approach to study how knowledge is conceptualized and used in each of three environments. After presenting a considerable amount of background information on knowledge management, the authors explain they started with a preliminary phase in which they convened two focus groups of information professionals thought to be knowledgeable about knowledge management and other information issues in organizations. The participants critiqued the research plan and recommended organizations that might be interested in participating.

Eventually they chose to study a law firm, a higher education institute, and a local city council. After meeting with key personnel to develop the interview schedule and list of interviewees, they interviewed approximately ten individual managers and professionals in each organization. Transcribed interviews were coded, using a software package designed for use with qualitative data.

After describing each organization, findings are discussed in terms of governing structures, nature of the clients, knowledge strategies, staff skills and professional development, organizational culture, concepts of knowledge, and information services. The authors observe that "although only the commercial higher education institute had formally adopted a knowledge management strategy, all subjects expressed quite perceptive understandings of the role of knowledge in their organizations and had explicit strategies to promote knowledge processes." Although they did not know the jargon of knowledge management, they did understand the role of knowledge in their organization and had strategies to deal with it. The role of information professionals was described as being "in many respects problematic and marginal to the central activities that constituted the information and knowledge activities within the organization." Much of the information was informal and involved interaction between individuals.

It would be interesting to know more about the questions they asked. Thorough planning is a strength of this study.

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HYPOTHESIS
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