Hypothesis

The Newsletter of the Library Research Section of MLA

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THINK TANK ON MLA'S RESEARCH INITIATIVE

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Sponsored by the Library Research Section
and
The Knowledge and Skills Task Force

INTRODUCTION

Prudence Dalrymple, Past Chair, Library Research Section

This special issue of Hypothesis contains abstracts of the papers prepared for the Think Tank on the Research Agenda.

The first half of the day was spent discussing issues arising from the papers written by the participants, each of whom summarized their paper and articulated key research questions in their content area. The following excerpts from notes attempt to capture the gist of some of the discussion.

These questions could ideally act as a springboard to further develop and clarify directions for the Task Force.

What is the nature of research in HS/LIS (health sciences library and information studies?).

This is the key question that defines the "business we are in": What is the information system & service that is best suited to meet the needs of users?

What are the domains of research in HS librarianship?
Collaboration/interdisciplinarity.
What is the area of our jurisdiction?
What is our unique contribution?
What kind of research is needed in a service profession?
The Research Continuum: Basic----R&D---Applied---Innovation
Where does new knowledge come from? How do we know research when we see it?

Toward Defining the Central Questions in our Profession:

What is the perfect information system?
What is the library's collection--where is it located? what are its parameters?
What is in it?
In what form?
How organized?
How do we retrieve from it?
How do we analyze the information once it is retrieved?
How do we engineer it?
Who uses it?
How do we support it?
How can we facilitate access to and use of the available information?
What difference does the information make?
How do we measure the difference?
Does information change behavior?

Questions of implementing a research program:

How do we understand the environment in which our research in conducted?
How can we establish appropriate reward structures, particularly for mid-career librarians?

How shall we manage the human resources within our field--paraprofessionals, clinical medical librarians;

How do we manage the research literature, both of our own field and others?

What is the professional's role and responsibility in managing the quality of the research literature?

In addition to the participants, Fred Roper and Rachel Anderson representing the Knowledge and Skills Task Force and Roger Dahlen from the National Library of Medicine were invited to sit in. Reneta Webb, Director of Professional Development, initiated discussion on proposed administrative support structures for research coordinated by MLA Headquarters.

After lunch, the participants turned their attention to ways in which MLA can address these research areas and can provide support and incentives for health sciences information professionals to engage in investigations to address these issues. As a result of the afternoon session, it was decided to recommend that a Research Task Force be named.

MLA President Jackie Bastille, in meeting with the Executive Board in Washington in May, announced her intention to name a Research Task Force during her presidential year. The charge given to the Task Force is: designing an action plan (using the format of the Platform for change), to develop an MLA Research Program, which will include but not be limited to the following: identifying and describing research fronts in health information science; creating a Research Program infrastructure; identifying and developing educational activities; increasing awards, funding, and recognition for research; increasing marketing and promotion of research and results.

The Task Force members are: Jana Bradley, PhD; Nancy Fazzone; Carol Fenichel, PhD; Betsy Humphreys; Erika Love, PhD; Joanne Marshall, PhD; Ann Weller; Prudence Dalrymple, PhD, Task Force Chair; Mark Funk, Chair, Library Research Section, Ex Officio; Jacqueline Bastille, Board Liaison; Reneta Webb, Staff Liaison.

President Dick Lyders has pledged the profits from the President's Reception held at the 1992 Annual Meeting as seed money to support the work of the Task Force. During the summer, the membership of the Task Force was finalized, and a work plan was developed. The first meeting of the Task Force will be held in Chicago on December 12-14, 1992. A spring meeting has also been proposed, with reports to the MLA membership, the Library Research Section, and the Executive Board planned for the Annual Meeting in Chicago in May. Look for more news of the Task Force in future issues of MLA News.

As Chair of the Task Force, I have submitted a proposal to Dr. Donald Lindberg at NLM requesting additional support for the Task Force. Such support would be in the form of a research assistant who will build upon the work of the Think Tank to develop a literature review and "state of the art" paper on research in health sciences librarianship so that the Task Force has a common understanding of the current state of research in our field. Jackie Bastille has been in touch with NLM and we hope to have an affirmative response from NLM before the December meeting.

As past Chair of the Library Research Section, I want to express my appreciation for the support of the section over the past year and a half, and especially to the Section Officers and the Think Tank participants. I would like to encourage all members of MLA, but especially the members of the Library Research section who have a demonstrated commitment to research, to contact any or all of the Task Force members with your questions, concerns, and ideas. It would be especially helpful if you can contact them prior to the December meeting so that your concerns can become part of the discussions at that meeting.

I am encouraged about the direction last year's activities are taking, and am enthusiastic about moving forward. The Platform for Change has become an model for educational statements for library and information professionals; if we can accomplish our goal in a similar fashion, it will be a contribution to our profession.

THE THINK TANK

The participants and their topics:

1. Access: Hospital and Clinical	Jacque Doyle
2. Access: Academic and IAIMS	Nancy Roderer
3. Economics: Library Management	Ruth Holst
4. Economics: Salaries and Professional Authority	Jacqueline Bastille
5. Education: Practicing Health Sciences Librarianship	Carol Fenichel
6. Education: Requirements for the MLS	Erika Love
7. Information: Seeking and Use	Joanne Marshall
8. Information: Use and Value	David King
9. Literature: Library and Information Science	Naomi Broering
10. Literature: Medical	Ann Weller
11. Technology: Environment and Technology	Sherrilynne Fuller
12. Technology: Data, Information and Knowledge Management	Nina Matheson

THE SUMMARIES

ACCESS: ACADEMIC AND IAIMS

Nancy K. Roderer

Easy, effective access to all of the published biomedical journal literature is a simple but elusive goal of the medical library. The 90's will provide many opportunities for dramatic advancements in this central service function.

Improving access will require changes throughout the journal communication system that begins and ends with authors/users and involves the interrelated activities carried out by publishers, abstracting and indexing services, database producers and distributors, information brokers, and libraries. New technologies have brought new ways of doing things to all of these groups and it will take changes on all of their parts to achieve the next stage of evolution. Libraries, with their in-depth knowledge of user needs and preferences, can play an important role in guiding developments by making user preferences known, by reacting to new ideas and testing new products, and by analyzing the effect of different alternatives on the quantity and quality of service that they provide.

A research agenda for access might include:

* active medical library participation in design and testing of new information products and services;
* studies of journal usage patterns and user preferences;
* quantitative and qualitative studies of the user response to new information products and services; * library support of UMLS and other efforts to provide database locator systems;
* exploration of alternative methods of information retrieval new definitions of the library collection;
* economic analysis of collection alternatives;
* comparison of alternative distribution and storage media for journal articles;
* testing of alternative delivery schemes for journal articles research into links between user activities and the journal literature;
* collaborative research with journal system participants and with relevant academic programs.

IMPROVING LIBRARY MANAGEMENT THROUGH APPLIED RESEARCH

Ruth Holst

Economics and management as a subdivision of health science librarianship can be defined as how we plan, acquire, organize, and pay for all the resources required to deliver "information" to a defined population. Much of the research done in this area has been historical or descriptive in nature rather than scientific.

Economics and management require a lot of decision-making. Research in support of management decision-making can be very useful to library managers. Librarians love to count, measure, evaluate and describe things to document the need for and usefulness of those things. This places the focus on what has been done in the past or how it is being done currently, but does not provide much to direct us toward the future.

The quality movement in the U.S. is having a major impact on the health care industry. Hospitals view it as a way of improving the quality and value of health care. The essential ingredients of TQM include: (1) customer satisfaction, (2) accurate measurement, (3) continuous improvement/innovation, and (4) teamwork. All of these are ideal objectives for the management of the library as well.

The similarities between the application of the TQM philosophy to managing a hospital and managing a library are worth exploring. The same problem-solving techniques used by hospitals can be applied to continuously improving the operation of the health science library.

Applying the methods and tools of TQM to managing the health science library can provide a scientific basis for decision-making. Rather than managing by imitation, the library manager goes to the library's customers for direction. A process can be designed for identifying the information needs of the customer. Problems identified by the customer can be diagnosed and resolved using the appropriate analytic tools. Systems can be redesigned to be cost-effective and customer-focused, eliminating wasteful duplication of effort.

What kind of research is needed to make up better library managers? And how do we motivate members of the profession to conduct that research? Health science librarians should be encouraged to apply the tools and methods of TQM to the management of the library.

For the application of TQM to have an impact on health science librarianship,m library managers must be willing to document its use and publish the results. A new body of literature would then become available to assist the library manager in designing the kind of library systems suited to the needs of the changing health care environment.

Library systems designed with the customer in mind should help to position health science librarians as key

professionals within the health care team, in both clinical and academic settings.

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SALARIES AND PROFESSIONAL AUTHORITY

Jacqueline Bastille

In addressing research issues dealing with the economics of managing knowledge-based information, examining professional salaries is of particular importance. We need to look at the relationship of low pay to the low status of the health information professional, and the impact it has on all aspects of the profession. One way of examining this problem may be through careful analyses of salary data and quantitative work as exemplified by John Cullen. Another approach to the problem, which can enhance understanding and indicate areas to investigate, is the type of synthesized historical and sociological research done by Wiegand, Abbott, and Winter. This type of research suggests that with professional recognition comes occupational prestige, greater degree of autonomy, esteemed educational programs, recognition of value and services, and higher salaries.

Cullen, in his work on the nature of professionalism, has studied the dimensions of the stratification of professions and their essential characteristics. Knowledge and education are exchanged for power and prestige. For a system to reward, the perceived functional importance of the occupation must be seen as essential to the system's survival. This line of research emphasizes our need to use research results to convince our institutions and the general public of our value in order to elevate salaries, working resources, and the professional authority of our specialty.

Wiegand presents four components of an analytical framework (authority, institution, expertise, character) as a useful and instructive way to distinguish librarianship from other professions. Wiegand's theory supports an expansion of Cullen's research analyzing variables and their effects on one another when trying to understand why librarians seem to be underpaid.

In discussing resource allocation research, Blalock argues that since "it is unlikely that a single data-collection method such as survey research can provide [reasonably complete data sets], this implies a need for coordinated research involving multiple methods". Looking at the problem of salaries through profession-wide surveys describes the current situation. Trends in salaries can be ascertained and analyzed; but description alone cannot provide recommendations nor justifications for change.

Related to the idea of professional authority is professional jurisdiction. Jurisdiction, according to Abbott, is a more or less exclusive intellectual claim by a professional. "A profession that has yet to grow out of a limited area of work....will strengthen its current jurisdiction if it wins a new jurisdiction" such as medicine did in its earlier years by "absorbing surgeons, apothecaries, and homeopaths". In the past, the rise of professional authority has had the effect of increasing compensation. This was accomplished in medicine, in part, through empirical investigations into the effects Salaries and Professional Authority of medical practices according to Starr.

For research on medic ibrarianship to be useful, it must not only describe and explain the discipline's essential characteristics and existing economic and professional realities, but make pragmatic recommendations for positive change in defining its value and authority. The ideas presented in the Think Tank papers on areas which need investigation address areas in which we could win new jurisdictions. Given the state of rapid technological advances, and anecdotal evidence that librarianship's jurisdiction is changing it should be beneficial to both examine medical librarianship's current jurisdiction and to investigate new jurisdictions which we can claim and control.

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PRACTICING HEALTH SCIENCES LIBRARIANSHIP

Carol Fenichel

SCOPE

There are three primary research-related questions regarding the general topic "education" that are relevant to health sciences librarianship. The first is: "What education do librarians need to perform research?" The second is broader: "What education do librarians require to practice health sciences librarianship?" The third is: "How do we educate our users to use information systems effectively and efficiently?" Erika Love's paper addresses the first question and this one covers the second. The third falls within the scope of the Information Seeking and Use topic.

LIBRARY EDUCATION

The excellent and thorough report of the MLA Task Force on Knowledge and Skills, "Platform for Change: the Educational Policy Statement of the Medical Library Association," provides an ideal starting place for considering research related to education for health science librarianship. The report lists the knowledge and skills required by personnel in a health sciences library while acknowledging that no one individual could possess all the knowledge and skills. The report also makes recommendations for the education and professional development of health information professionals. It stresses the necessity of lifelong learning and that the ultimate responsibility for professional development resides with the individual.

Major research questions in education for health sciences librarianship follow logically from the "Platform." Broadly, they are:

Are the defined knowledge and skills valid? How will they change over time?

How will the needed skills be divided among staff? What are the optimal backgrounds of these staff?

Do schools of library and information science provide the educational opportunities that would permit students to obtain these skills?

Are there means to allow graduates to remain on the necessary "continuum of learning," to use the report's terminology, throughout their professional lives?

How effective are the recommended means for obtaining graduate education and lifelong learning for health sciences librarians?

Are the organizations identified doing their part?

DISCUSSION

There are a number of important general issues which impact the direction of research on professional education as well as other types of health information research.

*Evaluation can appear simpler and more achievable (as well as more justifiable in the work context) than research, and therefore performing simple evaluation studies is a good way to learn to do research as well as a valuable end in itself.

*We should follow our colleagues in Medical Informatics in defining the development and evaluation of innovative information systems as research, and encourage this activity.

*Librarians are not using fully the capabilities provided by automation to perform evaluation studies.

*While studying the use of systems and services and opinions about them is useful, we need to also direct energies towards identification of outcome measures. Establishing positive outcomes has more impact that simply demonstrating use of, or user satisfaction with, an information service.

*Creative means need to be developed to provide time for able practicing librarians to perform research. This is at least as important as increasing funding or providing training in research skills. Might a partial solution be funding for a "relief pool" of experienced librarians who could take the place of librarians who want to pursue research for a few months to a year?

*Educating library school faculty as to the important questions and opportunities by funding them to work in medical libraries during the Summer might be a good way to stimulate relevant research.

*The effect of faculty status on research by practicing librarians warrants examination.

REQUIREMENTS FOR THE MLS

Erika Love

The generic librarian will not be the librarian of the future. Therefore the core of knowledge of information studies needs to be reconsidered. It is not simply a synthesis of what libraries do. Even the general library education program needs to emphasize issues rather than procedures.

Yet, library schools cannot, in the course of two semesters, offer the opportunities to meet these different

demands; hence, the challenge to the education of the health sciences librarian is clearly calling for measures that go beyond the traditional program of the MLS degree.[1]

Librarianship lacks the definition and cohesion it needs, in the public mind and even in professional circles, in order to recast library education and to build an influential and credible research program by consolidation of strengths to make fundamental long-term improvements in professional education. Field experience and internship programs as a formal component of educational preparation for health sciences librarianship should give the newly graduated but inexperienced librarian a carefully planned exposure to the broad field of medical librarianship and to the specialized environment in which the health sciences library must function.[2] Both time for advance planning and an adequate staff are required to guide and teach the newcomer. The staff must be well aware of the state of the art and capable of transmitting its essence to the learner. Medicine has succeeded in building into its educational program such a series of supervised experience--internship, residency, postgraduate fellowships and courses, and innumerable more or less formalized continuing education opportunities. The physician's preparation to become a lifelong learner has been reaffirmed in a series of studies.

At the 1979 Allerton Conference, Louise Darling emphasized this neglected aspect of librarianship:

"Other professional schools have taken responsibility for directing internship and residency-type training programs. Why should this not be the case with librarianship? The schools have the educational expertise, the libraries the practical resources for training programs. The two should operate on the same cycle. Sharing the responsibility might conceivably lower costs to the point where internship experience could become a regular feature of the library school curriculum."[3]

In a volume published in 1986, a chapter on the education of medical librarianship concludes that our profession has grown and matured under the time-honored triad of medical research, education and patient care to the point where health sciences library practitioners seem more aware of the qualifications of the graduating physician, more concerned about accreditation of medical schools and hospitals, and more committed to imparting information-seeking skills to health care practitioners than they are to the qualifications of graduating librarians and accreditation (if any) of academic programs in medical librarianship and the self-instructional skills of librarians.

Health sciences librarians should raise the very question which they themselves have asked of those medical educators who depend on health sciences library support for <u>their</u> educational programs and curricula that produce the physicians of tomorrow. These same questions should be asked of their colleagues in library science academia.

First, are students being taught the skills necessary to evaluate and make use of the library and information science literature? Since librarians must become expert in assessing and managing information resources, the literature of their own discipline is an excellent starting point.

Second, do library schools promote awareness of the costs of information services? Today's librarian must learn to show tangible results for money spent, and in the case of publicly supported libraries--like most of those in the health science arena--the additional challenge of emphasizing the public good aspect of library services must be addressed.

Third, how are students being taught while in library school? Are modern means of self-instruction used to reduce the didactic element of classroom teaching? There is much talk about computer literacy, but are library schools updating the students' learning environment beyond the conventional and limited online searching module?

Finally, how are library students learning to identify, formulate and solve problems? How are they being taught to grasp and use basic concepts and principles, and to critically gather and assess data? More important, are they being prepared to become active, independent and self-directed learners in a rapidly changing information environment?

This last is, perhaps, the most fundamental guarantee, not only for professional survival, but to assure that future librarians will remain at the cutting edge of their profession.

Such questions might well stimulate a dialogue between the health sciences library practitioner and the library school faculty. While the lines of communication currently seem somewhat tenuous, such interchange may be encouraged by (1) a sabbatical exchange program for teaching faculty and practitioners, (2) practitioner advisory boards to library school curriculum committees, (3) visiting professorships for practicing academic medical librarians on sabbatical and (4) field experiences and fellowships for teaching faculty wishing to gather research in a practicing environment.

These and other ideas are not new; many are, indeed, alive and well in some quarters. Yet each presents unique challenges to both academicians and practitioners. All of them could be successfully implemented if both parties would acknowledge the responsibilities--and rewards--inherent in such cooperative ventures. Other professions have established successful partnerships to enhance the professional preparation of their members. The call is out to medical librarianship as well.[4]

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INFORMATION SEEKING AND USE

Joanne Marshall

Information seeking and use is one of the most prolific research areas in the field of library and information science; however, the site-specific, system-specific or service-specific nature of some of the studies limits their usefulness. Information seeking and use still deserves a place on the MLA Research Agenda because it is one of the few areas in library and information science where a number of substantive theories exist. The three theoretical user study areas named by Hewins (1990) are: the user values approach, which examines the perceptions of utility and value of information systems; 2) the sense making approach, which examines the way people make sense of their everyday worlds and how information is used in the process; and the anomalous states of knowledge (ASK) approach, which examines how people seek information concerning situations where their own knowledge is incomplete. Dervin and Nilan (1986) suggest that the similarities in these three approaches to studying user needs are contributing to the emergence of a new, truly user-focused paradigm. The fact that the area of user studies has developed over the last 40 years gives us an opportunity to learn from our shortcomings and to plan more effective research in the future.

The current emphasis on service quality in our institutions and in our profession also makes user studies of continuing importance. The total quality management process requires a focus on the customer (in our case, the library or information user) and on the use of data in developing, evaluating and maintaining services. We should take advantage of our user study literature to assist in service quality improvement. In the area of user studies, we should carefully examine the criticisms that have been made of past research and undertake the following: a renewed focus on understanding the user, from the user's perspective rather than from the provider's perspective; the development of deeper methodologies that will uncover the user's real needs, both expressed and unexpressed; and a broad view of information seeking and use (e.g. including both library users and non-users in studies) and of information (e.g. different sources, formats and modes of communication). By understanding the broader context in which people seek, create, organize and disseminate information, we will better understand our role as health information professionals in facilitating this process. We should also be prepared to go beyond the traditional limits of user studies, which have tended to focus on how people use information services, to examine the impact and value of the information obtained from these services.

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THE IMPACT OF MEDICAL LIBRARIES AND INFORMATION SERVICES

David N. King

Few questions confronting our profession are more perplexing than those concerning the impact of libraries and the outcomes of their services. Although these questions are not new, their importance to the profession has increased in recent years. Solid data are needed for planning, implementing, managing and assessing library services, their contribution to institutional missions and the health of our nation. Better knowledge of our services and their impact is needed as a foundation for education and training of librarians. Research that transcends introspective assessment, giving evidence of the practical uses of libraries and information services, their outcomes and limitations, is needed for guiding the progress of our technology and designing innovative services.

It is remarkable that so little pertinent information has accumulated over the years. Decades of so-called "user studies" provide evidence concerning preferred sources of information among biomedical researchers, clinicians and administrators, and the importance of the literature, but little insight concerning the contribution of libraries or their services on occasions when they are used. Research into clinical problem solving and decision making has been pursued vigorously during the past 20 years, yet only a handful of the hundreds of published reports even mention case-related use of the literature, much less libraries as a contributing source. And the majority of studies undertaken by libraries have concentrated on documenting users, questions, and general satisfaction rather than investigating outcomes.

As a result of these studies, we know that researchers, academic clinicians, and those practicing in urban areas (thus having access to better resources) tend to refer to the literature and use libraries more often than doctors in private

practice and in more rural areas. We know that doctors use the literature for continuing education and general awareness. We know that some health professionals use the library regularly while others use it rarely, and that colleagues are an important source of information for all. We know that those who do use libraries are generally satisfied with the service they receive and sometimes find it useful. But we have little documented evidence concerning the impact of libraries and information services, or their practical value to those who use them. And as a result, we know very little about the importance of libraries or the effectiveness of information services.

Perhaps more insidious, as Artemus Ward once said: "It ain't so much the things we don't know that get us in trouble. It's the things we know that ain't so." There is the widespread belief in our profession that we know our clientele, know their information needs, know how and why they use libraries, and know the benefits they derive from doing so. As we have discovered in recent years, if we can't document it and demonstrate it to others, we make our jobs much harder. We assume that libraries contribute positively to patient care, biomedical research, health care administration, and the dissemination of medical knowledge. Yet we have struggled to convince others of the value of clinical medical librarian services and other consulting services that more directly involve us in contributing to the practical endeavors of our clientele. But even more, it is dangerous to assume that we know more than we do. Our libraries are in transition as we race forward with our various technological enterprises, develop and expand innovative new services, and cut back on traditional services. Can we assume that what we once knew (or thought we knew) about our clientele and the outcomes of information services is true in the new information environment? What are the effects of CD-ROM, in-house online databases, remote access, and the slow shift away from mediated searches and personalized reference services? How effectively are our clientele able to use electronic sources for decision making, problem solving, and question answering? What is the impact of our services and resources? What are the outcomes? How do we know?

A number of problems contributing to our inadequate knowledge can be identified. The first involves asking the right questions. What do we mean by outcomes? This question is fundamental and critical to research, because it provides the focus. I would suggest that there are two types of outcomes that can productively be investigated. The first is proximate outcomes. People use libraries and consult the literature to solve problems, answer questions, make decisions. The proximate outcome of their enquiry, then, entails the contribution of the information provided by the library: was the problem solved, the question answered, the decision made? The second type is ultimate outcomes. How well was the problem solved, the question answered, the decision made? Was it better than had the information not been provided?

The second problem contributing to the gap in our knowledge concerns methods. Investigating outcomes is not as easy as documenting activities, products, services and use patterns of libraries. It requires the observation or participation of others, usually the health professionals served. Careful attention to research design is important, of course, but investigation of proximate outcomes is reasonably within the grasp of librarians and researchers. Examples of research on proximate outcomes among clinicians include the Chicago study and its replications, the Rochester study, and a study of information for clinical problem solving reported last year at MLA Annual Meeting. These studies give evidence of the practical impact of information acquired by clinicians for decision making and problem solving. They are limited not only by their scale, but also in that they focus primarily on clinicians using hospital libraries. Similar studies in regards to biomedical research, health care administration, and health education, and especially within academic medical settings, have not yet been pursued. NLM's critical incident study of MEDLINE users was valuable in this regard, since it included administrators and researchers, with extensive documentation of the questions, problems and decisions that resulted. As with most carefully executed case study research designs, it is rich in the depth of detail achieved, and a valuable contribution to our knowledge. But it is also difficult to generalize statistically, and leaves many questions concerning medical libraries unanswered. More difficult methodologically are studies of ultimate outcomes, for it is here that research must not only document the problems solved, decisions made, questions answered, but also determine how well. Are the changes in patient care precipitated by the
information provided by libraries positive? What is the impact on morbidity, mortality, length of stay, biomedical advances, teaching effectiveness, administrative decisions, economic factors?
Research that might give objective evidence concerning these and other ultimate outcomes is more difficult to design and execute. To date, few studies of ultimate outcomes have been attempted. The third problem contributing to our gap in knowledge involves investment in research. The number of library researchers is small, their time and the grant support available is limited, and the process of doing original research is complex, with the result that their efforts are often directed elsewhere. Libraries as institutions, individually or in cooperation, have allocated little of their own resources for research, either in terms of personnel or funding; many librarians lack the knowledge to design and conduct original research, and lack the incentive of reward structures to encourage it. But, as is apparent in the increased interest in research and evaluation among many hospital librarians in recent years, money, time and expertise are not the

determining factors in the equation. If research is considered important, the resources will be allocated and expertise sought to facilitate it.

Research on the impact of library and information services is needed today more than ever. Performance measures and similar management techniques used to monitor our services, all of which focus primarily on inputs and outputs, are of limited value when we cannot place them within the broader context of outcomes as the touchstone of quality. Technology, no matter how well intentioned and popular, if developed in isolation from an understanding of the way in which information is used, without attention to the purposes and results of its use, is a venture without a guide.

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PUBLISHING OF MEDICAL LIBRARY RESEARCH FINDINGS

Naomi Broering

The opportunities for publishing medical library research findings in the library literature are endless. There are over 650 library and computer science journals available to library researchers. Nearly all library, information science, and even some medical journals accept research papers on library studies. Computer journals and medical specialty journals are also a source for manuscript submission. Because there are several appropriate journals for library research, we do not need a new periodical. What is needed is a mechanism for improving the number and quality of research articles submitted for publication.

The Ulrich's International Periodicals Directory cites 636 journal titles that are classified as library and computer journals. Ulrich's also lists 82 active US publications in computers and information science, information theory and computer applications. Approximately 200 journal titles are in library and information science. There are 35 titles on computer applications in medical science in the US and 13 titles that are non-US. There are other medical journals that include library articles occasionally, such the New England Journal of Medicine, JAMA, Academic Medicine, and Annals of Internal Medicine.

The Bulletin of the Medical Library Association (BMLA) is the major publication vehicle for medical library researchers. Since 1966, the Bulletin has published 1,218 articles. Of these, 363, or 29.8%, were research papers. The majority of these articles use the survey method, even though there are eleven known research methods in library science--bibliometric, Delphi, experimental, historical, observation and description, survey, operations research, experimentation, content analysis, secondary analysis, and multiple research. Over 41% of the BMLA articles were surveys and 20.7% operations research. The topics were primarily 50.5% applied librarianship and 29.2% theoretical research. The subject coverage included collections, information design and retrieval, education of librarians, automated systems, networks and organization of knowledge. Over 26.7% were about automation, but in the past five years the percentage has increased to 40% on automation. The articles were submitted mostly by academic librarians. Hospital librarians were nearly absent from the literature. External support for library research has been minimal. Only 101, or 27.8%, received funding and of those 82.3% received federal support.

An analysis of the articles reveals that applied topics dominate the research literature. Generally, research published in the BMLA is less sophisticated than other library literature. Surveys have been interpreted as research by many practicing librarians. There is an over-abundance of survey studies and usually the samplings are too small or the questionnaires too inadequate to produce quality outcomes. To play the research game, medical librarians need to learn the rules and develop better skills. Research requires a study or an investigation to prove a hypothesis. For example, if it is a technological study, there should be tests of the technologies or development of a specific breakthrough or advancement. Medical librarians need training in research methods to conduct adequate research studies. They must understand the steps in the research process, which include:

1. Plan the protocol

2. Develop a prototype
3. Conduct the investigation
4. Analyze results
5. Report findings

A major responsibility of the researcher is to report new discoveries in the literature. Reporting research results is different from descriptive writing. Research is more than describing how the study was done: it requires analysis of outcomes, benefits and impact. A new discovery must be made. There is a process with a logical progression. The papers should not ramble "hither and yon" but be direct with a beginning, a middle, and an end. What is said in a table or graph does not need to be described in detail.

The BMLA intends to change and expand the types of research articles accepted. The April 1992 issue featured a section called "Highlighting Research." In addition, special symposia on research topics are planned. In the future, we hope to explore the possibility of a bulletin board or e-mail for electronic research reports as a special electronic supplement to the BMLA. However, there are issues of access, distribution, copyright and intellectual property that need to be investigated.

Finally, it is recommended that the Medical Library Association create a librarian training program for potential researchers that includes opportunities to take CE courses on writing for publication, developing research methodology, and preparing grant applications for research projects. There is an existing CE publication course and syllabus. Other CE courses can be developed. If there are plans to increase research publications, the BMLA can extend the peer review process to evaluate properly research manuscripts, and thereby assist young investigators in their publication efforts.

THE MEDICAL LITERATURE

Ann C. Weller

The role and status of the medical literature is a relatively new area of research for medical librarians. The importance of research into the medical literature has been necessitated by the increasing inability of librarians to purchase sufficient material for their libraries, by the growing evidence of inaccuracies, duplication, and reports of fraudulent research in the literature, by a desire to understand the publication process, and by a determination to have some input into the quality and format of published literature.

The entire process of producing a volume housed in a medical library raises questions which can provide the basis of research projects. From laboratory research to field work a vast number of studies are described, first, in a presentation at a scientific meeting and then in more detail in a manuscript which is sent to a journal for a publication decision. Once at the journal office, manuscripts are reviewed, revised, resubmitted, revised again, accepted or rejected, and, if accepted, published. The scientific community learns about a piece of research through colleagues, invisible colleges, citations in the literature, talks at a meeting, browsing through currently received journals, or literature searchers, to name a few. After publication the material is subjected to the scrutiny of the scientific community, often through discussions in the letters to the editor section of journals.1

Librarians should be among those conducting research into the questions posed by the process of publishing scientific information. The questions raised by this process are interesting and numerous. Areas of research where significant work needs to be done in which medical librarians have a high level of expertise include:

* Medical literature. Detailed studies of the relationship between scientists and the literature they produce have not been produced.
* Editorial peer review. The whole process of editorial peer review is just beginning to be examined in a scientific method.
* Uniform requirements. Currently over 400 journals have agreed to receive manuscripts prepared in accordance with the uniform requirements. What, if any, has been the impact of this step?
* Structured abstracts. There have been no studies that have compared the data from the structured abstract with data from either the author's own abstract or an abstract written by an abstracting service such as Chemical Abstracts.
* Duplicate publication. Probably every editor has a story of a duplicate publication or "autoplagiarism". The phenomenon has never been fully studied.
* Inaccuracies in publication. What is the extent of two types of inaccuracies: intentional and unintentional?
* Authorship. Who can claim authorship? What are the implications of multiple publications?
* Citation analysis. Can citation patterns determine the quality of a journal or a publication?
* Content of journals/types of journals. There is an underlying assumption that some journals are "better" than others. How does one determine which are the "better" journals?
* Standards of publication. Should librarians be concerned with journal standards and journal formats?

Librarians have the opportunity to become the experts in the study and analysis of the medical literature. Work could be done as independent researchers or in collaboration with researchers from other disciplines. The study of medical literature is a largely unexplored area of research for medical librarians. It is an area whose time is ripe for medical librarians to play a lead role. Three of the 33 presentations given at the First International Congress on Peer Review in Biomedical Publication were authored by librarians[2]. Librarians should be playing a lead role in the design, execution, and analysis of these studies.

References

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2. First International Congress on Peer Review in Biomedical Publication. Peer Review in Scientific Publishing. Chicago: Council of Biology Editors, 1991.

INTERDISCIPLINARY COLLABORATION, ENVIRONMENT AND TECHNOLOGY

The Research Role of Librarians and Professional Associations

Sherrilynne Fuller

Technology provides tools but should not be considered an end unto itself. Rather, two underlying themes need to be explored in order to place technology in its proper context. Those two themes are interdisciplinary collaboration and the healthcare environment.

NLM's IAIMS initiative is helping to foster an information environment in which old assumptions regarding the library's role are being challenged. Librarians never have had exclusive rights to the information pie--but now everyone seems to be called an "information professional." Non-librarians are increasingly involved in administering health sciences libraries and in leading research in areas which librarians traditionally have considered their own, such as bibliographic database searching, thesaurus construction, examining information use by health professionals, and designing bibliographic retrieval systems. The following is one of the more comprehensive definitions:

> "...Medical Informatics is the problem-oriented information science that investigates all forms of computer processing in health care. The 'experiments' in this field are medical computer systems of our own devising: Expert Systems, Data Bases, Clinical Information Systems, and Integrated Academic Networks. We are interested in how the performance of these systems relate to their logical structure; how closely a given approach may correspond to human cognition; and in the relationships between machines, organizations and human behavior." (Lincoln, Thomas L. "Medical Informatics: The Substantive Discipline Behind Health Care Computer Systems. International Journal of Bio-Medical Computing 1990 (26):73-92.)

Regardless of the definition one chooses, there is no argument that medical informatics is truly interdisciplinary involving as it does physicians, nurses, basic science researchers, cognitive psychologists, information scientists, computer scientists, and engineers, to name just a few. Librarians may be part of medical informatics but in general we have tended to attempt to create our own research agenda in isolation without considering it in the context of what is going on in allied research areas. Our own research efforts can be strengthened by involving other disciplines with expertise in areas outside our own primary strengths.

Library research has concentrated too exclusively on the library environment and tended not to study the healthcare environment itself. There is a good deal of important research to be done to characterize what information individuals need and want within the healthcare environment. As many clinical librarians have demonstrated, physicians articulate only a small percentage of the questions that an alert librarian can identify and answer.

How can be ensure that technology is brought to bear on the real information problems of health care professionals? Should our research and service responsibilities stop at bibliographic information systems and the published record? What is our role in planning for regional computer networking for healthcare institutions? Research areas in which librarians can and should play an important role include VOCABULARY, INTERFACE DESIGN and INFORMATION EVALUATION.

VOCABULARY. The NLM's Unified Medical Language System (UMLS) is one promising example of tool-building which could have a profound impact on the utility of information resources. Librarians can play a variety of roles in this process. Librarians possess a large and impressive body of knowledge regarding indexing and categorization of bibliographic information. Such knowledge is transferable to other types of information such as image databases and patient records.

INTERFACE DESIGN. The purpose of interfaces is to provide users with intuitive approaches to using computer resources, whether those resources are databases, other software programs, or utilities. Library database interfaces have tended to have a single purpose such as the online catalog or searching MEDLINE. Working to create

interfaces which successfully provide blended access to databases is clearly an important role for librarians.

INFORMATION EVALUATION. By information evaluation is meant the development of filters for sorting the wheat from the chaff. Relevance is only one measure of the utility of information and current retrieval systems do not perform optimally on relevance retrieval. Other measures of utility are reliability and authority. Too often our information retrieval systems provide the relevant items but do not offer a way of asking for the reliable or authoritative answers. Before one can build information retrieval systems which will provide algorithms for making such judgments, it is necessary to look at how human experts make those judgments. What are the criteria applied by experts to judgments regarding the utility of information? Research questions abound in this area.

Estelle Brodman, in her chapter on "Research in Health Science Libraries" in the Volume I of the 1982 edition of the MLA Handbook, concludes with her hope that "this chapter will make clear to the health science librarian that research is neither frightening nor difficult to conceive and carry out, but that reasonable people acting reasonably and carefully can perform research in an exemplary manner." This might be considered one of the broad, overall goals for MLA's Research Initiative.

DATA, INFORMATION, AND KNOWLEDGE MANAGEMENT

Technologies – The Research Role of Librarians and Professional Associations

Nina Matheson

Basic assumptions:

1. Within the next decade electronic technologies will be the dominant technologies for storage and dissemination of scientific data, information, and knowledge (hereafter referred to as STI) resources.
2. The technical tools supporting the creation, acquisition, representation, storage, and dissemination of STI are interrelated processes that are likely to be separate from the technical tools supporting the location, access, retrieval, reformatting and manipulation processes. These processes are fundamental to the client-server networking model likely to dominate the environment over the next two decades.
3. Research goals may be of at least 3 classes: 1) investigation of fundamental processes leading to the understanding of underlying principles; 2) applying existing tools in innovative ways to solve old problems; 3) designing and developing new tools that solve problems.
4. The problems in academic environments are generally divided into 3 categories: education, patient care, and research. The perspectives on these functional categories will vary depending upon one's role as learner, teacher, or doer.

Research goals of librarians and library associations:

1. Traditionally librarians have created location, access and retrieval technologies for managing print technologies, i.e., secondary or tertiary tools from institutional perspectives. In the client-centered electronic model the client is the individual rather than the institution, and access to the knowledge is the object not access to the storage medium. For the mid- to long-term, intelligent access and navigational tools will be needed as these tools make up the 'library without walls'. Whether the development of such tools takes place in existing libraries or other emerging venues such as centers for scholarly technologies is a matter of command of disciplinary knowledge, the will and the opportunity.
2. Normally, professional associations concentrate on the knowledge domain of their discipline. The largest and most successful have published the key primary as well as the secondary literature of their disciplines (AMA, ACS, APA, IEEE). They are essentially the knowledge managers in their professional domains. The monopolistic position afforded by the electronic technologies to those who have responsibility for the "publishing" technologies places these associations in strategically favorable positions. It is not clear that library professional associations have a functional platform from which to successfully launch either research efforts in technologies or training in such research.
3. The MLA Platform for Change quotes the Matheson-Cooper report under the heading "Research, Analysis, and Interpretation" and enumerates the general research knowledge and skills likely to be needed. If the assumptions stated above are correct, and if librarians are to play a role in the development and uses of knowledge management technologies, given the culture of the biomedical sciences, then certain conclusions can be drawn. Librarians will need to possess disciplinary knowledge that enables them to function at the "publishing" end as well as the client end of the model.
4. Some organizations, such as the CNI (Coalition for Networked Information), see the library research goal not as 'research' but innovation, for innovation may lead to re-engineered organizations. Framing the right question is fundamental to research and to innovation.

FROM OUR CHAIR...

THAT OLD TIME RESEARCH RELIGION

Mark Funk

The Library Research Section has been preaching to the choir for a number of years at MLA. It is time to reach out beyond the true believers and bring in a few more converts. A lot of MLA members are interested in doing research, but are scared, or feel they don't have the expertise for such hallowed activities. I think that our Section can convince these heathens that they really are intelligent enough to do research. To this end, at MLA 1993 the Section will be sponsoring a room of informal discussion tables called "Renew your research readiness: meet the mentors and ask for advice."

We hope to have Section members volunteering as discussion leaders and advisors for topics such as Statistics, Research Design, Publishing, Surveys and Questionnaires, Bibliometrics, Getting Started/Getting Ideas, Grants, etc. Ideally, MLA members who are interested in research would walk in, sit at a table, ask questions, get advice, and listen to the general discussion. They will be free to wander from table to table, collecting wisdom and pearls of advice. Friendly, informal counsel can go a long way towards enticing people to pursue library research. Formal presentations of completed research projects can be a bit scary to the novice.

The Section needs volunteers to lead the table discussions. A handout or two would be good, but nothing fancy is required. Experience and a willingness to share are the important qualities. Coordinating the program are Beth Paskoff and Alexandra Dimitroff. Please give either of them a call if you would like to volunteer, or have suggestions for other table topics.