Trends of Health Libraries: From Physical to Digital Space

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Abstract:

While it has become popular in recent years to emphasize the library as place, an academic and research library is better viewed as a complex sociotechnical system that serves multiple stakeholders. As basic library functions shift from physical spaces to digital collections, the nature of reference work will adjust accordingly. Trends in Traditional Input Measures like Budget, Collections, Equipment, Space undergoing changes and there is more emphasis on technological infrastructure with born digital aspects.

Key words: Environmental Factors, Technology, digital collection, contextual information, Library System

Introduction:

Library as System

While it has become popular in recent years to emphasize the library as place, an academic and research library is better viewed as a complex sociotechnical system that serves multiple stakeholders. Each stakeholder has expectations, needs, and understandings of the library, but not all stakeholders are direct users. Consequently, there is a tendency to place the end-user perspective at the forefront of discussions of the library's future. While it is important to be user-centric in design and implementation, to shape the form of successful future libraries we must address the broader context of all stakeholder needs. User-centered design in sociotechnical terms is not a popularity contest; it is a process of informed decision making intended to advance a solution that serves the demonstrable needs of an intended community.

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As libraries become more concerned with creating social spaces, they should also be concerned with entering into the people space, the library as accelerator, where information is sought, communicated, shared, tagged, and mined. Without taking this second step, the library adds little value over a bookstore.

Some might argue that the quality of access to digital collections is continually improving, so with more space for people and increased understanding of digital tools and collections, we are faced only with security and economic concerns while we proceed with business as usual

Mission Alignment

The Medical library is tied to the academic and research mission of the institutes. In contextual terms, we must recognize the shifts in scholarship practices that are occurring in our institutes and research labs, and then seek to understand how the library functions appropriately in this new world where large data repositories become the norm for some disciplinary practices; where many students never visit a physical campus, let alone a library; where libraries assume part of the role of publishers; where tenure decisions are loosened from the documentary formats we have known for decades; and where special collections become indistinguishable from museums. As holders of the intellectual record, we need to reconsider how libraries interface with scholars working in remote teams sharing server space.

Library as the Accelerator of Discovery

As basic library functions shift from physical spaces to digital collections, the nature of reference work will adjust accordingly. Collection development, never an exact science, will be hugely important in an age of increasing data and a shortage of sophisticated filters. Where the catalog offered a point of entry to a bounded collection, the seamless access of digital resources requires us to design for more dynamic, unbounded, and nonlocal information. Clearly, there remains a need for more intelligent searching than is provided by Google, but we should not underestimate the power of technological advance to render current approaches to human guidance obsolete. The list continues. Take any attribute assumed core to the professional work of librarianship and you will find it altered on some level by the information world we now inhabit, bringing with it associated threats and opportunities.

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Educating by Design

On the research side, we have witnessed an explosion of digital resources in both the sciences and the humanities and while the lone-scholar model will not disappear, the collaborative nature of research in many domains has enabled distributed teams of scholars to work together, sharing data, creating resources, and co-authoring without ever meeting. The outputs of these endeavors will not always find their resting place in established publishing venues, yet scholars will still require quality control, refereeing standards, tenure-and-promotion reviews, and grants.

The process of enquiry will, in one sense, remain as it ever has, but the mechanisms involved, and the ability to engage and enable these scholarly activities, will require more than the provision of a physical space. When collaboration is truly loosened from colocation, we need to think differently about the wider system of academic libraries in which any one node is part of the greater intellectual resources of our world. Libraries cannot effectively prepare for the future or position themselves in medical Institution campus until they understand their changing roles in the current learning and research environment.

On the research side, we have witnessed an explosion of digital resources in both the sciences and the humanities, and while the lone-scholar model will not disappear, the collaborative nature of research in many domains has enabled distributed teams of scholars to work together, sharing data, creating resources, and coauthoring without ever meeting. The outputs of these endeavors will not always find their resting place in established publishing venues, yet scholars will still require quality control, refereeing standards, tenure-and-promotion reviews, and grants. Interpretation is confounded by different institutional goals and library policies.

New technologies have rendered traditional measures less effective in explaining what is happening in libraries because the scope of traditional measures is too narrow to encompass the field of change. For example, traditional measures do not capture sufficiently the readily apparent changes in the definition, preservation, and delivery of library collections. In the past a "collection" was what the library physically owned. Records in the library catalog referred to items in the collection.

Libraries now license access to remote electronic collections that they do not own. The library catalog contains records with interactive URLs pointing to the licensed items and libraries frequently provide other points of access to these items on their Web site. If a print subscription

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is cancelled, the library retains ownership of the (previous) physical volumes. If an electronic subscription is cancelled, the library does not retain access to the (previous) digital volumes.

In the past, multiple purchasing or subscribing libraries in effect archived and preserved print publications. In the digital arena of licensed access, libraries no longer play this role, but must look to publishers to provide this service for digital collections

Traditional library performance measures do not reveal these significant changes or the real concerns or serious implications that arise from them.

Concerns about the stability and longevity of digital publications discourage many institutions from valuing publications "born digital" in promotion and tenure considerations, which is a strong deterrent for faculty, though such publications are the conspicuous solution to the economic crisis in scholarly publications. This crisis and efforts to better serve our constituencies are changing the relationship between libraries, publishers, authors, and artists. Libraries become publishers when they digitize collections, host journals that are "born digital," or assemble student or faculty works online.

As commercial publishers and aggregators usurp much of the work involved in collecting, organizing, and preserving (digital) information, the focus of librarians is shifting to teaching and research. Librarians are expected to facilitate skilled information retrieval (not Web "surfing"), intervene between the user and the information to help users evaluate what they retrieve, and assume greater responsibility for learning and research outcomes. Knowing that usability affects usage, librarians are also expected to do more user-centered research employing a greater variety of research methods than in the past (for example, focus groups, surveys, interviews, user protocols, card-sorting studies, and paper prototyping).

Developing or providing access to digital collections and services requires librarians to collaborate with a wider range of people than in the past, including computer scientists, graphic designers, pedagogy experts, archivists, and museum curators. The core competencies required to perform these new tasks are different from those required of librarians in the traditional print environment. Again, traditional measures do not capture these new roles and responsibilities.

The cumulative effect of these changes appears to be a reformulation of the library's mission. The freely accessible information on the Web, in consort with the escalating cost of library materials, jeopardizes the traditional mission of libraries to create and sustain large self-sufficient

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collections for their users. Library philosophy and practice have shifted from purchasing materials and offering services "just in case" to "just in time."

Traditional library measures indicate some differences among libraries and changes over time within libraries but, in the absence of additional library measures, the consideration of contextual factors, and clearly articulated assumptions, offer nothing that will help us recognize which differences or changes are significant in terms of fulfilling our mission and serving our constituencies in higher education. The situation is critical.

Trends in Traditional Input Measures

Budgets: With rare exception, libraries are experiencing slight increases in materials budgets, educational and general operating budgets, and staff salary lines. Operating expenditures have increased significantly to meet automation and electronic resource needs, which create shifts in staffing, resources, materials, space, and equipment

Collections: Most libraries are canceling serial subscriptions, purchasing fewer monographs, and-to keep pace with user demands for more desktop delivery of materials-spending a growing percentage of their materials budget on licensing access to electronic resources. The decline in acquisitions may be due to the increased cost of materials, a more effective distribution of materials through collaborative purchasing (via consortia, organizational networks and inter-institutional agreements), or a shift in users' expectations of libraries. "Just in time" information delivery may be becoming an acceptable replacement for the traditional "just in case" archival imperative.

Staff: Overall staff size is slowly declining, but many library systems departments are hiring more people to maintain the increasing array of library information technologies. Clerical positions are being eliminated throughout the library and positions are being created or reclassified at higher levels (with higher salaries) because more sophisticated technical or managerial skills are needed now than in the past.

Equipment: The era of microform equipment, photocopiers, and the card catalog has been replaced with a growing array of hardware, software, and systems. Libraries need budgets and articulated replacement cycles for all of this equipment. More often than not, the capital budget is insufficient to replace equipment before it becomes obsolete. Furthermore, libraries must find the financial resources to replace equipment purchased with one-time funding from grants. Aside from the budgetary concerns, traditional measures do not help libraries with equipment planning.

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Space: Following years of reducing or eliminating user and staff spaces to accommodate growing physical collections, more and more libraries are looking to offsite storage to solve their space problems and wondering how to fund offsite storage from an already strained budget. Current library standards for user, staff, and collection spaces do not consider the space occupied by technology, for example, computers, printers, scanners, and fax machines. Traditional measures have been ineffective if not irrelevant in efforts to convince university and college administrators that the Internet and digitization are not a near-term solution to the library space shortage.

Trends in Traditional and Emerging Output Measures

Materials circulated. Use of print resources is decreasing. Use of video and other media appears to be increasing. Overall circulation is declining. In-house use of library materials is also declining. Why come to the library to check out a printed book or use a printed journal when you can find an electronic version of the book or journal or something comparable or good enough on the Web?

Reserve items circulated. The circulation of print reserves is declining rapidly, even in institutions that do not offer electronic reserves. In some institutions faculty are putting fewer materials on reserves. The decline in reserve items and usage may be due to the availability of full-text resources on the Web - provided by the library or by other entities.

Reference questions answered. Traditional face-to-face reference service with a librarian is being transformed by information technologies deployed to reach an increasingly remote audience, for example, electronic mail, "chat" and "see you, see me" videoconferencing software. Reference services provided by the library are apparently being challenged by reference (or reference-like) services provided by entities outside of the library. Why ask a reference librarian when you can Ask Jeeves

Library instruction classes: The number of traditional library instruction sessions and participants was increasing until recently, but now appear to be on the decline, perhaps because distance-learning technologies are being deployed to deliver library instruction.

Gate counts: Gate counts are declining. Why go to the library if you can find the information you need using your personal computer, create an Internet chat room to discuss your group project, or use a similar discussion facility provided in course

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Electronic resource use: The demand for desktop delivery of materials is increasing. Use of electronic resources is growing more rapidly than expected. Use of older journal volumes in electronic format is increasing even more rapidly than use of electronic resources overall.

Printing and photocopying: The trend appears to be that the volume of printing is increasing and the volume of photocopying is decreasing, probably because of the increased availability of full-text electronic resources and printing of electronic journal articles. However, additional contextual information is needed to understand what is actually happening in any given institution.

Cost-effectiveness: Libraries appear to be stymied about how to assess the cost-effectiveness of their operations. To survive they must understand the costs associated with their collections and services. The difficulty of allocating the costs of a particular collection or service to content, staffing, facilities, hardware, and overhead is compounded by the difficulty of distinguishing between start-up costs and ongoing expenditures in an era of rapidly changing technologies, prices, and workflows.

Environmental Factors

In the absence of environmental contextual data, traditional measures are difficult to interpret and explanations of why library use is changing are destined to be speculative. The larger context surrounding libraries must be examined to identify environmental factors that may be influencing the changes occurring in libraries and confounding interpretation of library trend data. The list of factors explored below is not comprehensive. It is presented to stimulate reflection and discussion. Exploration of additional factors is invited and encouraged.

Changes in Students and the Curriculum

Students today want 24-hour access to digital library collections and services, as evidenced by a study of the online habits of 2,000 American college students conducted by net Library.

- 82% of the students surveyed own a computer and "virtually all of them use the Internet."
- 93% claimed that finding information online makes more sense than going to the library.
- 83% said they were frequently unable to get the materials they need from the library because it is too late or too early to go to the library.
- 75% said they do not have enough time.
- 75% liked the convenience and 71% liked the time saved by finding information online any hour of the day.

Changes in the Technological Infrastructure

Students clearly prefer desktop delivery of information and if they have a personal networked computer, in their eyes they may have no need to come to the library - hence the decline in gate counts and reduced circulation of traditional library materials.

Information Resources and Services Provided by Entities Outside of the Library

What impact do Ask-A services, Questia, and Web sites like Library Spot have on student use of their local library? We need systematic quantitative and qualitative studies of these information resources and services to understand their impact on library use and the constituencies that libraries aim to serve. If the goal is to provide quality service to users, does it matter whether libraries provide the service or someone else does? If students are using these services and their quality is poor or inconsistent, how do librarians direct them to the better services and teach them how to critique the information they retrieve? Perhaps most importantly, how do libraries factor in the impact of these services in their efforts to assess the educational outcomes of the collections and services that they provide?

SUGGESTION

1. Understand how and why libraries and library use are changing

2. Identify and define a manageable set of measures, including new environmental indicators, that can be used to document and explain how and why library use is changing

3. Recruit staff to collect and analyze genuinely comparable data about library use and influential environmental factors

4. Reach agreement on how to measure the learning and research outcomes and cost-effectiveness of library collections and services, which entails determining how to define and assess "value" in a hybrid world of traditional and electronic collections and face-to-face and online services

5. Publish and disseminate the results of this analysis to inform strategic planning and case-building and spur discussion of the implications of changing patterns of library use for the future of libraries and librarianship

6. .Plot a course into the future that is flexible enough to cope with the speed of change precipitated by information technologies and the Internet

All libraries are undergoing changes in the digital age, but medical libraries face additional issues that are unique to the health care system. For example, medical research is creating enormous amounts of information. Furthermore, technology is separating health-literate patients from patients with low health literacy. One way librarians can help such practitioners stay on top of the latest literature is with what Atreja, Messenger-Rapport, B, Jain, & Mehta, N.(2006)call an "online evidence-based information portal "This portal combines an RSS feed of current articles from high impact medical journals with a blog feature which physicians can use to critique those articles. Another exciting way RSS feeds can benefit medical professionals is by creating a daily "PubMed query tailored to match specifically the current awareness needs of that patron"

Medical librarians should extend their reach beyond those already well-established in the medical field, too. Lemley and Burnham(2009) note that "medical librarians will be faced with a golden opportunity to train faculty, students and practitioners in the use of" Web 2.0 tools, Scherrer (2004) recommends "taking the library to the users' point of need" (p. 226). This is an opportunity for medic al libraries to enter the consumer's field of vision and another strong reason to offer sound information.

Conclusion

The issues of changing technology, information explosion, and paradigm shifts in patient care, accompanied by the financial and literacy obstacles they create, can be effectively addressed to allow medical librarians to adopt a stronger, more forward-looking role in the field of medicine. Three things make medical librarians a valuable asset. First, they have access to the highest quality and most diverse sources of information. Second, they have the service orientation to make that information available to patrons. Third, and most important, they have the singular education and experience to process and distill the information so that it is useful to the end user, whether the end-user is a patient, provider, or researcher. No one else in the field can lay claim to all three qualities, and with the medical field in metamorphosis, the time is ripe for medical librarians to redefine their position within it.

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