The changing continuing education role of health sciences libraries

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Libraries have always organizationally supported the continuing education (CE) objectives of their respective institutions. As CE experts increase their understanding of the learning process and the factors that make CE opportunities successful, it is important that health sciences librarians use this knowledge to enhance their positions as key players in the CE field.

This paper surveys the literature related to the roles of health sciences libraries in CE, reports an informal survey of health sciences librarians, and identifies innovative services that integrate the library with the lifelong learning processes of its users.

Four distinct support areas are identified in which the library relates to CE (resources, content, education, and information management), illustrating traditional library CE roles and suggesting new opportunities.

To be successful in improving the library's role in CE, librarians must attend to their own lifelong learning needs, increase collaboration with educators and CE providers, participate in research that addresses the learning and information assimilation processes, and actively involve the library in the quality filtering process.

Man's mind, once stretched by an original idea, never again retains its original dimensions.

Oliver Wendell Holmes

INTRODUCTION

An examination of the changing role of health sciences libraries in the continuing education (CE) of its users reveals a very close relationship between libraries and CE, even though it is not one that is often given much consideration. This paper illustrates the current roles of health sciences libraries in lifelong learning and CE and identifies the trends that are moving information management closer to the "teaching moment" [1], or actual point when information will be best retained by the user.

Gruppen segregates CE into two parallel tracks. One is formal CE, which includes the "traditional programs centered around particular topics and targeted at particular audiences." The second is informal CE, or "learning which takes place in the context of practitioners confronting and attempting to resolve problems in day-to-day practice" [2]. While health sciences libraries of today play significant roles in both the formal and informal CE milieu, there are options for improved and expanded participation in both. These options can be implemented within the library itself or beyond, extending the notion of the library "without walls" and taking the librarian and library services to the user's worksite.

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Library practice in supporting CE can be separated into four distinct areas: resource support, content sup-

port, educational support, and information management-based support. The literature and a selected sample survey of health sciences libraries identify current activities in each of these areas. The literature also identifies a number of areas in which libraries can enhance support of lifelong learning for their clientele. Indeed, the library's role in CE transcends participation in each of the four distinct areas, suggesting an altered educational paradigm that reinforces some of the concepts addressed in Matheson and Cooper's landmark "Academic Information in the Academic Health Sciences Center" [3] and in the AAHSLD/MLA *Challenge to Action: Planning and Evaluation Guidelines for Health Science Libraries* [4].

FORMAL CE: RESOURCE SUPPORT

Most health sciences libraries support formal CE in their parent institutions, although the mechanism for that support varies. At the least sophisticated level, libraries may provide video players, slide projectors, and computer projection panels in support of a lecturer. While library staff become participants by providing equipment, they are not involved intellectually with the development or content of a program, but rather provide support that is technical in nature.

A parallel support service provided by libraries in hospitals and academic institutions is referral to existing formal CE programs. In this service, librarians identify courses, workshops, or audiovisual programs for requesting practitioners, using specialty journals, synopses of CE offerings, and locally produced reference tools. This referral need, and resulting service, appears greater in smaller institutions where homegrown CE has to be generic to attract a sufficient audience to be cost-effective. Practitioners in rural communities are more frequently forced to go outside the locale for specific topical updates.

Collections of media are also being used by health care practitioners for CE credit. Several health sciences libraries underwrite individual CE by purchasing subscriptions or individual CE programs in a variety of media. Often these libraries have elaborate administrative procedures that assure the receipt of CE credits for the individual practitioner [5–6]. At the University of Arizona, media programs are provided not only to in-house clientele but are provided via interlibrary loan to clinicians throughout the state [7]. Intellectual interaction with an institutional CE department elevates the participatory status of libraries in the organization and can enhance the quality of continuing education programs [8].

Topical bibliographies or selected reprints encourage further exploration of concepts by CE participants. Librarians can also serve as resource persons by identifying potential speakers or by assisting in identification of patterns of information need and use [9–10].

In a number of smaller hospitals, library staff have full responsibility for formal CE; the librarians have become the CE staff. They have had to learn new techniques such as needs assessment, program logistics, and marketing, and how to integrate library resources, both print and media, into content. These responsibilities have been sought by librarians who have recognized unmet local CE needs [11]. In other cases, staff reduction or combined CE and library medical staff committees have dictated this expanded role.

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Support of formal CE seems likely to continue in the immediate future. The microcomputer laboratories under development in libraries provide a rich environment for using topical, computer-assisted instruction (CAI) software. Interactive videodisk programming highlights the realistic nature of learning, and as new interactive programs become more available, the library's role in supporting a more sophisticated active learning environment will increase.

Former methods of support should be reconsidered. In an online environment, calendars of local CE programs could be accessed easily by all: a new medium for an old message. Further, as libraries become major institutional players in the telecommunications environment, they may become local nodes for nationally broadcast interactive programming. This technology-based application extends the logic of provision of media hardware and software, using ever more sophisticated dissemination modes.

Because libraries have been among the first to embrace CAI and interactive video, libraries have served as agents of change at many institutions. Collegial relationships with CE staff must be deepened to stay abreast of current educational trends and to heighten awareness of technological advances in information and education.

CONTENT-BASED CE SUPPORT

The concept that librarians make CE possible by providing reference service or bibliographic searching is arresting. Yet it is clear from the preceding articles in this symposium and from the literature that health sciences library clients perceive that libraries are par-

ticipating in CE when they provide requested content or bibliographies [12–14]. Content-based library support could fit the CE model that Manning labels "practice-linked . . . designed to supply knowledge and guidance on specific problems at the time a physician is studying a patient" [15]. The concept of practice-linked CE could be applied equally well to the researcher, the nurse, or any other user seeking information related directly to the project under consideration or the person under care.

Viewing reference services, one of the major functions of health sciences libraries, from this perspective makes meaningful a number of services that have developed around information services, and raises a number of questions. Traditionally the reference function, including online searching, is user-driven. Unless a question is raised or a search requested, the information service apparatus of libraries lies fallow. Yet it is well understood by reference librarians that a user's verbalized need may not be the actual information need. Skilled reference interviews often elicit better user comprehension of the self-identified need. The user (learner) is the initiator of the reference process (educational experience), and the reference librarian becomes the collaborative channel (teacher) for interpreting the need and linking the user with the information.

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This traditional model of librarian/client-educational experience relies on a number of factors for success. It depends on good client assessment of self-need. It demands a serious user commitment of time in calling or visiting the library. It requires a sophisticated reference librarian who is capable of performing skillful interviews and who has a command of appropriate bibliographic tools. And it requires sorting and synthesis of multiple resources on the part of the user.

Given the number and complexity of the factors required for success, it is not surprising that alternative paradigms have been explored. These include clinical medical librarianship (CML) programs, Literature Attached To the CHart (LATCH), information project packaging, and selective dissemination of information (SDI) and current awareness programs. CML and LATCH have been well documented in the literature [16–17].

The library's role in producing information packages, often "filtered" information packages, is less well documented [18]. In this CE service, librarians review the mass of information available, identify the material that responds qualitatively and quantitatively to the user's question, and often assimilate that information into an easily digestible package. SDI requires that users develop topical information profiles that are matched periodically to a computerized bibliographic database to provide a tailored periodic topical update [19–20]. And finally, current awareness is an attempt to provide a selected, refined review of a broad base of relevant literature [21–22]. Producing filtered information packets on demand reduces the amount of time a user must spend identifying and retrieving information, while placing a heavier burden of responsibility for sorting and assimilation on the information professional.

In each of these cases, at least one of the critical factors or barriers (client recognition of need, poor transmission of need, remote location of need, delay in response, too much material) is eliminated. In CML, a professional information specialist is on hand to assist in identifying information needs and to assume responsibility for a prompt quantitative and qualitative response. In LATCH programs, the information need is identified by the first user, but others with the same information need are not required to verbalize the need since the literature can be found on the chart. Time between need and access is short, and in most cases, only the significant articles are included in a LATCH.

Following the logical progression of reducing the barriers to success for the librarians content-based role in CE, a model system emerges that would help the user identify information needs at the time of the need, provide efficient access to a resource that could assist in refining the need, and finally produce a quality-filtered response. These match a significant number of the goals of the integrated academic information management systems (IAIMS) that are currently under development and those in the field of medical informatics [23]. Libraries have made significant progress in the IAIMS arena; they are beginning to recognize the importance of timely, streamlined access to content, thereby improving the potential for real learning experiences [24].

Practitioners in the field of medical informatics are also making significant strides in bringing information to the user at the point of need. Greenes noted, "Medical informatics is now entering a phase in its evolution in which the long sought dream of the health care professional or student being able to instantly access knowledge, whenever and wherever needed is becoming a reality." Greenes goes on to identify three current trends that are permitting rapid growth in the field:

1) increasing recognition and awareness by the medical professional of both the need for, and the potential use of, the computer as a knowledge source and repository; 2) increasing availability and variety of electronic knowledge bases; and 3) increasing effort devoted to the development of computer tools for medical knowledge management [25].

In a few instances, librarians are beginning to assist in accessing new resources, such as expert systems and decision-support systems. In some cases, librarians have served as the catalyst to encourage the systems' introduction into the clinical setting. In others, the librarians are actively engaged in working with medical informaticists in the development of tools and in the tools' installation into IAIMS systems.

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Asserting that provision of information actually constitutes CE might be open to debate. Where are the learning objectives, the education plan? Many practitioners identify reading as their most important learning method. Manning noted that "reading is the primary source of physicians' medical information. . . . Beyond new developments in medical care, the need to review fundamental principles necessitates a lifelong plan of reading" [26]. Richards spoke of a teacher-learner control continuum in which the teacher-controlled learning environment is appropriate at the start of medical education, becoming more self-directed as the learner progresses. He noted that

> most study results show that physicians use continuing reading as their primary method of continuing their professional learning, that reading has a powerful influence on their awareness of new medical advances and is a major method of seeking further information about these advances [27].

Clearly, librarians play a role in this self-directed learning experience. And importantly, many practitioners report that tying new information to a particular patient or problem improves retention of that new knowledge. " 'What I remember most,' said Edward Shortliffe, 'is information related to a specific patient' " [28].

Learning objectives and self-directed lesson plans for comprehending a new body of knowledge may imply library intercession with appropriate literature. These learning plans are, however, legitimately originated by the user, not the library. Beyond that, the library does play an important role in providing content-based CE when responding to specific user-originated questions.

THE LIBRARY'S ROLE IN CE: EDUCATIONAL SUPPORT

A chapter in the *Handbook of Medical Library Practice* that describes the library's role in education begins

> The health science library assumes a responsibility for teaching its users on a daily basis. Much that has been done to fulfill this responsibility is passive in nature and has been accepted as a routine part of the overall public service operation. Since the 1960s, however, there has been a growing trend in health science libraries to interact actively with users by providing instruction in bibliographic technique [29].

Techniques used by libraries in instructing users about information organization and retrieval are multiple. Lectures, organized curricula, orientations, handouts, and hands-on experience are all reported in an informal sample survey of health sciences libraries. Almost all libraries queried (hospital, federal, academic, and society) provided some form of bibliographic instruction.

Matheson spoke to three themes that are critical to forward movement in the control and management of the medical knowledge base: the need for reeducation in medicine is consistent and constant, learning how to learn is essential, and finally, "physicians must be educated to understand the design and use of computers to manage the knowledge base and its practice" [30]. Lindberg described a seven-level taxonomy for knowledge and understanding of medical informatics. In this taxonomy, the learner moves through progressive skills and knowledge building, finally reaching the point of being able to build knowledge tools that are applicable beyond one's own specific need [31].

The AAHSLD/MLA *Challenge to Action: Planning and Evaluation Guidelines for Academic Health Sciences Libraries* identifies the education roles for academic health sciences libraries:

- The library acquires and maintains equipment for library education programs and serves as a laboratory for information-related projects.
- The library's mission statement reflects the educational priorities of the institution.
- The library integrates its educational activities into the institution's academic programs and services.
- The library extends the educational resource base through access to both on- and off-site educational databases.
- The library targets the educational programs to primary user groups at various stages in their professional and career development.

- The library's educational programs anticipate and respond to the demands made on health professionals for competence in collecting and managing information.
- The library designs its education programs in information-seeking skills to reflect technological changes.
- The library's staff provides instruction in the use of technology for accessing, collecting, managing, and evaluating information resources [32].

There is further impetus for rapid movement of health sciences libraries into this expanded CE role. *Physicians for the Twenty-First Century* (known as the GPEP report) claims

> perhaps the most important concept emanating from this study is that medical students must be prepared to learn throughout their professional lives. This learning must be self-directed, active and independent [33].

Health sciences librarians across the country have begun to take these challenges seriously, identifying and enhancing their educational offerings not only for the student, but also for the practitioner.

Health sciences librarians across the country have begun to take these challenges seriously, identifying and enhancing their educational offerings not only for the student, but also for the practitioner who may have missed the opportunity for computer literacy, development of bibliographic-searching skills, or knowledge of basic information management [34–35]. Moore described an elegant teaching program at Texas Tech University Health Sciences Center that addresses the "teaching library" [36]. This model included not only a series titled "Coping with the Biomedical Information Explosion: An Introduction to Computer Literacy and Information Management," but also a series of lectures titled "Skills for Lifelong Learning."

Beyond development of courses, some libraries are beginning to identify an educational responsibility as part of their mission. St. Louis University Medical Center Library staff have completed the early phases of a strategic plan and have identified their mission: "The mission of the Medical Center Library is to assure access to information and to assure the development of lifelong learners for the improvement of health" [37]. That mission has been approved by the university administration, and collaborative strategies are being explored to move toward the development of lifelong learners. Other libraries report that they are beginning to consider not only the educational roles of their parent institutions, but also their own responsibility for education of users.

Libraries are adapting not only long-standing bibliographic instruction techniques to the new technology but are moving toward teaching in-depth do-it-yourself skills for information management. And, more importantly, libraries are rapidly becoming key players in the development of new attitudes and values for self-learning. Lifelong learning is actually reaching the status of mission; this emphasizes the high value health sciences librarians are placing on their role in education and CE. Librarians are deliberately putting policy and resources behind this priority and are moving closer to their customer base.

CE AND INFORMATION MANAGEMENT SUPPORT

Librarians recognize organization of information as their forté. Centuries of study have gone into the development of schema that articulate likeness and dissimilarity of realms of information. Dewey, Bliss, and Ranganathan are a few of those who blazed the way. Standardization of records, rules for common identification of key bibliographic elements, thesauri, and authority files all speak to lessons learned about information management. Librarians rely daily on this accumulated wisdom.

Development of databases, personal information management systems, and new hypertext works suffer without application of the lessons that librarians know well. These lessons include the understanding of hierarchy, the need for standard vocabulary, the concepts of treeing, and principles of indexing.

That knowledge has been particularly invaluable since the advent of the computer, which provides increased bibliographic options for storage, manipulation, and retrieval of data elements. Indeed, full-text retrieval now goes beyond retrieval of bibliographic data to retrieval of data within the actual document. Key-word linkages tie key words to data files, providing expanded opportunity for bringing concepts and a variety of information together for the user.

Development of databases, personal information management systems, and new hypertext works suffer without application of the lessons that librarians know well. These lessons include the understanding of hierarchy, the need for standard vocabulary, the concepts of treeing, and principles of indexing. At a symposium sponsored recently by Simmons College, Francis Mikasa asserted that technology and empha-

sis on creation of specialized databases have created a need and set the stage for a "new generation of system makers" [38]. Herein lies an opportunity for librarians to capitalize on their knowledge of information management and assist in the development of new tools, new texts, and new pathways for information access.

ENHANCING THE HEALTH SCIENCES LIBRARY'S CE ROLE

Clearly, health sciences libraries are deeply embedded in user perception of their own CE, even though librarians do not often see CE *per se* as a significant part of their role. It is equally clear that the methods of the past, or even the present, will need to change to accommodate new understanding of learning, new information technology and management strategies, and the pace at which new knowledge develops. Several factors will be fundamental for success.

- Health sciences librarians must attend to their own lifelong learning needs, acquiring reeducation in skills that are essential for the twenty-first century. If librarians are to assume a major role in educating users, librarians must understand and be able to apply adult learning concepts in the classroom and with the individual learner. Librarians need more than basic computer literacy to be able to accelerate knowledge acquisition along the continuum described by Lindberg [39]. Also, it will be necessary to revisit principles of information management.

The Medical Library Association has been actively engaged in addressing this concern. Its new Academy of Health Information Professionals provides an opportunity for all health sciences librarians to develop and implement plans for individualized programs for lifelong learning.

- Collaboration will be essential in moving the CE role of health sciences librarians forward. Medical informaticists, computer specialists, and educators are all beginning to focus on the new milieu for CE; each brings specialty knowledge to the issue. Librarians bring a history of service and an understanding of the essentials of information organization and retrieval. Through collaboration, new pathways can be identified and implemented for users' lifelong learning.
- Many issues remain unresolved. Research will be required to ensure that the methods and even the objectives of new techniques and formats for information provision and knowledge access and transfer are those which address improved practice and understanding. Fundamental questions about learning and transformation of data to information (and then to knowledge) have yet to be answered. Studies of the relative importance of one medium over another have not yet definitively ascribed the power of the visual image versus the written or spoken word. There is much to know before health sciences librarians and their collaborators will be able to say authoritatively that "the" method for CE and lifelong learning is in place. The variety of individual learning patterns may indeed make "the" method an absurdity, but for the present, research is essential to move CE closer to the teaching moment and the teaching medium.
- The thread of "quality filtering" by health sciences librarians is woven through the four areas of their intimate involvement with user CE. Librarians have been "quality filters" for years, selecting materials for purchase and identifying bibliographic tools for access. As practice has moved closer to the user's point of need, as in CML, quality filtering has intensified. Controversy is associated with the notion that persons who are not content experts might have the ability not only to sort the literature for users, but also to condense it for easy digestion. This is one more area where additional research will be required to determine the optimum response to quality-filtering questions.

CONCLUSION

Viewing much of the library's work as integrally tied to user CE offers a subtly different perspective than the traditional view of service and information management. This perspective does not alter the work of the library, but it does offer insight into a possible new emphasis.

Much can be learned from other professionals, educators, and medical informaticists who, like librarians, are strongly committed to assuring that the practitioner is as up-to-date as possible.

There is much to link health sciences libraries to the evolving CE frontier. Libraries are ideally positioned to address the need for individualized learning and self-directed enquiry discussed by Manning [40]. Librarians have begun to respond to some issues of need for timely information, not only at the hospital bedside, but also in the practitioner's office; librarians are examining new ways of linking those practitioners with relevant information.

Much can be learned from other professionals, educators, and medical informaticists who, like librarians, are strongly committed to assuring that the practitioner is as up-to-date as possible. Attention must be paid to ongoing research that helps identify patterns of information need and access. To be successful, librarians must know the most acceptable form

of that information and the way in which it is used. Librarians must continue to form partnerships with others who are working to bring relevant information to the worksite and must remain alert to the results of research in the CE field.

Tying the work of the library to CE and lifelong learning could strengthen the library's relationship to the institutional mission of the parent organization. This also provides a framework for considering and applying a new paradigm for service—a paradigm that is linked in many ways to the CE adult learning models.

This fresh perspective lends credence to the current directions of IAIMS, medical informatics projects, and the library's intense involvement with these activities. Health sciences libraries should examine their current models of support for lifelong learning and begin to explore ways to bring relevant, timely information closer to the user's point of need.

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