

Practice and Reflections on Embedded Services in Medical Libraries: A Case Study of Qiqihar Medical University Library (Postprint)

Authors: Wenli

Date: 2023-07-26T00:00:00+00:00

Abstract

[Purpose/Significance] Based on the embedded service concept, this study designs an embedded service framework for medical libraries and attempts embedded service practice, providing reference value for medical libraries to carry out embedded services.

[Methods/Process] By studying the principles, development history, and service models of embedded service patterns, an embedded service framework for medical libraries is designed based on user needs and initial embedded service practices. Under this framework, the study examines embedded service content and roles in different domains, as well as the extensibility and expandability of medical library services, and discusses the embedded service practices conducted under the guidance of this framework and the service effects achieved.

[Results/Conclusion] Under the embedded service model, “the library is a growing organism,” library productivity is enhanced, the scope of new professional roles for librarians will continue to expand, and personalized embedded service models represent the future development direction of medical library services.

Full Text

Preamble

Exploration and Reflection on Embedded Services in Medical Libraries: A Case Study of Qiqihar Medical University Library
Qiqihar Medical University Library, Qiqihar 161006

Abstract

[Purpose/Significance] Based on the embedded service concept, this paper designs a framework for embedded services in medical libraries and explores

practical implementation, offering valuable insights for medical libraries undertaking similar initiatives. **[Method/Process]** By examining the principles, developmental trajectory, and service models of embedded librarianship, we designed a medical library embedded service framework tailored to reader needs and preliminary practice. Under this framework, we investigated embedded service content, professional roles, and extensibility across different domains, while documenting service practices and outcomes guided by this framework. **[Result/Conclusion]** Under the embedded service model, “the library is a growing organism”—library productivity is enhanced, librarians’ professional scope continuously expands, and personalized embedded service models represent the future direction of medical library services.

Keywords: medical library, embedded service, clinical librarian, informationist

With the rapid development of internet technology, deep integration of educational philosophy and information technology, and continuous acceleration of informatization, technology has transformed library service paradigms. Traditional library services face challenges and mismatches between demand and offerings. Users increasingly need library professionals integrated into their work environments to provide essential literature and information services supporting medical care, research, and other activities. Embedded service has emerged as a highly welcomed model, with practices across various libraries offering valuable lessons for medical libraries. This service model has become an innovative trend in medical library service delivery.

The concept of embedded service originated with P.B. Knapp, who proposed that librarians should collaborate with faculty to integrate library instruction into the overall university curriculum rather than offering it as a standalone service. This represents the earliest formulation of embedded service theory. In 1967, Washington Hospital Center launched the first librarian-involved medical service project—Literature Attached to Charts (LATCH), where librarians collected high-quality, patient-specific literature based on clinicians’ needs. In 1971, G. Lamb first introduced the concept of the clinical medical librarian (CML). In 2000, F. Davidoff and V. Florence proposed a more advanced role—the informationist. Despite initial debate, this evolution from librarian to informationist gained strong support, elevating librarians’ professional standing and enhancing their sense of value. In 2004, M.A. Banks coined another term: “Information Specialist in Context (ISIC).” By 2010, M.A. Polger distinguished between CMLs and informationists, noting that informationists are integral members of clinical care teams, possess professional or health sciences knowledge, and are less tethered to traditional library functions. The transition from clinical librarian to informationist requires both a learning process and mastery of both library science and clinical medical knowledge.

Research on embedded service models has focused primarily on clinical librarian services and informationist services. In studies of clinical librarian models, J. Harrison et al. described the UK clinical librarian model based on core services (literature searching) and skills (effective communication with medical staff),

with literature retrieval as the central element radiating outward to other services, where skills and activities are interwoven and interdependent. A. Brett et al. further studied the Clinical Librarian (CL) model in 2011, demonstrating that it provides effective literature search results, positively impacts clinical decision-making, and earns high satisfaction from clinicians. Regarding informationist models, N.B. Giuse proposed an informationist maturity model in 2006 comprising five stages (baseline, preliminary outreach, formalized service, established service, and iterative optimization), corresponding to different service levels and processes. Additionally, J.A. Rankin et al. conducted quantitative research, proposing classic informationist and emergency-response informationist models that emphasize lifelong learning, strong personal capabilities, information retrieval skills, information management and organization competencies, and knowledge service abilities with appropriate knowledge backgrounds.

As information technology and user needs evolve, medical library services and roles continue to transform, with innovative services and roles constantly emerging. D. Cooper et al. summarized 14 roles for embedded medical librarians, vividly describing and summarizing the domains and extent of embedded services. Literature from 2013-2018 introduced additional embedded service roles, with over 20 roles identified to date. Figure 1 [Figure 1: see original paper] condenses the developmental trajectory of foreign medical library embedded service models, role evolution, and service level advancement, demonstrating continuous service upgrading, role expansion, and capacity enhancement. Under the embedded service model, the medical library service is indeed a growing organism.

Domestically, research on embedded services has, on one hand, yielded rich experiences and theoretical achievements in embedded subject services at some libraries. On the other hand, embedded services at many medical university libraries remain in early stages, offering considerable room for further research and exploration. Domestic studies have primarily provided macro-level overviews of the necessity and significance of embedded services, focusing on introductions to embedded subject services, embedded librarians, service contexts, and technical models. From a service content perspective, some scholars understand embedded services as providing not just general resource guidance but also material selection and location, knowledge point collection and expansion, outcome evaluation, and interdisciplinary architecture connection and communication. From a service subject perspective, embedded services are defined as librarians integrating into user communities to jointly accomplish specific work objectives or tasks with professional information services. The domestic monograph *Theory and Method of Library Embedded Subject Services* by Sun Tan and Chu Jingli examines recent developments in library embedded subject services and their main models, providing methodological guidance and practical examples that have influenced and advanced embedded services across Chinese libraries.

2. Embedded Services at Qiqihar Medical University Library

2.1 Framework Design for Medical Library Embedded Service Model

Reviewing the developmental history, service roles, models, and tiered services of medical library embedded services reveals that embedded service represents a fundamentally different paradigm from traditional library services. While its core remains traditional services such as literature retrieval, reference consultation, and technical application, its outcomes are value-added. After years of in-depth study of domestic and international medical library embedded service models, particularly drawing upon Professor Chu Jingli's theories and methods on embedded subject services, our library (hereinafter "this library") began experimenting with embedded services under the guidance of principles including target embedding, functional embedding, process embedding, system embedding, temporal-spatial embedding, capacity embedding, emotional embedding, and collaborative embedding.

Embedded services require librarians to leave the physical library, enter users' work environments, proactively understand needs, and provide user-centered services at all levels. Librarians must embed themselves in research teams, clinical settings, and teaching environments to deliver value-added library services. To better implement embedded services, we designed a framework diagram (Figure 2 [Figure 2: see original paper]) based on embedded service characteristics and our library's user population. As shown in the framework, the embedded service model encompasses services embedded in teaching, research, clinical practice, and other domains, with personalized embedded service models, service content, and extensible components. The framework demonstrates that medical library embedded services are extensions of traditional services—expansions of both content and operational models. Centered on readers and their needs, it designs different service domains for different user groups, and within each domain, provides different embedded services according to personalized service principles to meet diverse literature and information needs. Under this framework, librarians leave the library and embed themselves among users, aligning with users' work objectives to deliver value-added services.

2.2 Service Elements and Characteristics of the Embedded Service Model Framework

Embedded services expand traditional services horizontally and extend vertically, serving diverse user populations with more diversified and personalized content and methods, forming a multi-dimensional service model that yields value-added outcomes. The framework's elements and characteristics include:

(1) Horizontal Expandability of Service Scope. Embedded services extend beyond traditional library offerings. Under this model, library literature services have reached into all aspects of education and teaching, supporting research and participating in medical services. Clinical librarian and informa-

tionist services have gradually developed, providing mobile library services, remote digital reference consultation, and document delivery. With widespread application of new technologies, service scope will further expand.

(2) Vertical Extensibility of Service Levels. As the university's literature and information center, the library plays a crucial role in teaching and research. In terms of service depth, it provides literature services supporting user research and teaching, proactively delivering immediate, effective, and in-depth information and knowledge services based on user needs. This vertical extension further demonstrates the library's functional value and service enhancement.

(3) Diversity of Service Objects. Under the embedded service model, service objects have diversified. This library's users extend beyond in-person visitors to include medical workers at affiliated hospitals, primary and secondary school teachers and students, and researchers from other universities. Additionally, with embedded service development, community residents, hospital patients, and people with disabilities have become potential service users. Service domains dynamically adjust according to different needs.

(4) Diversification and Personalization of Service Content and Methods. Different embedded services are provided for different needs. Literature and information resources, professional knowledge and service capabilities of personnel, information technology, service methods, and operational models are all recombined according to personalized needs. Personalized (customized) embedded services primarily address individual requirements.

(5) Reorganization and Integration of Service Staff and Resources. Resources form the foundation of service delivery. Sufficient literature and information resources, competent professional staff, and convenient network information resources and delivery tools are prerequisites for embedded services. In resource organization, embedded services require integrating library literature and information resources from the perspective of teaching, research, and medical needs, expanding channels for reasonable resource access. In staffing, embedded services combine "physical service networks" (primarily in-house staff) with "virtual service networks" (external experts and professionals).

3. Embedded Service Practice at This Library

Based on the embedded service model framework in Figure 2, this library has continuously developed and standardized medical library embedded services. Practices primarily involve embedding in teaching, embedding in student learning, embedding in research teams and affiliated hospitals, and actively serving primary and secondary school students citywide (including left-behind children). Figure 3 [Figure 3: see original paper] illustrates these practices, each with defined service objectives, target users, content, and methods.

3.1 Embedded Services for Teaching Units: Establishing Teaching-Library Shared Spaces

Library professionals integrate into teaching faculty's work environments to provide information services, enabling physical space reorganization, resource organization, and service design. Service objectives include improving students' information literacy, assisting faculty instruction, and providing pre-class preparation, student management, equipment maintenance, and literature retrieval. Service locations include PBL (Problem-Based Learning) information sharing spaces, subject service sharing spaces, and other information commons.

In the PBL information commons, the library provides textbooks, reference books, computers, wireless networks, printers, and regularly conducts database training sessions. The establishment and operation of the "PBL Teaching Information Commons" integrates library space, resources, staff, and embedded service concepts into the PBL teaching process. This service has operated for six years and become a distinctive teaching information space. Additionally, a subject service information commons was established at the Basic Medical College, providing literature and service facilities with management and service systems, offering innovative services.

3.2 Embedded Services for Medical Students: From Service Guarantee to Humanistic Care

Aligned with the university's "three-orientation" talent cultivation model, embedded services for students target three objectives: (1) improving professional competence through literature and information services; (2) enhancing humanistic qualities and professional spirit through reading promotion activities; and (3) strengthening physical-mental quality and social adaptability through service education. Service locations include teaching buildings, dormitories, and other primary student activity venues.

Beyond traditional circulation services, we emphasize integrating humanistic care into service details, using the four seasons as service themes: spring features World Book Day activities including themed reading, book exhibitions, and essay contests; summer provides free cooling drinks, learning support, and exam period services; autumn focuses on new student library orientation and reading promotion activities with positive psychology book exhibitions; winter offers New Year poetry and riddle contests, blanket lending services, postgraduate entrance exam support stations, and rest waiting areas. We also assist struggling students with academic completion and positive psychological encouragement, transforming service guarantees into humanistic care. This distinctive humanized medical library service model was featured in November 2018 by Heilongjiang Television, *Heilongjiang Daily*, *Life News*, and Northeast Network.

3.3 Embedded Services for Research Units: 8-Hour Real-Time Document Delivery

Research has become increasingly central to university work, and library services have expanded from traditional literature services to all aspects of research. Our embedded research services aim to: (1) promote library resources and services; (2) identify user needs and provide personalized services; and (3) support discipline development with literature resources and services. Service locations have shifted to research institutes, laboratories, and academic departments, embedding librarians deeply within research teams.

Based on teaching and research staff's actual and potential literature needs, we designed embedded services with core offerings including frontier developments and hotspot information in disciplines, disciplinary evaluation analysis, academic level assessment, research output evaluation, project data analysis, and citation verification. Library staff conduct over a hundred visits annually to teaching and research units, organizing database training in academic departments and meeting rooms, surveying literature usage needs, and providing real-time consultation. We established a document delivery group with nearly 300 teaching and research staff members, integrating virtual and physical services to accept and fulfill requests anytime, winning widespread appreciation.

3.4 Embedded Services for Affiliated Hospitals: Door-to-Door Services

Embedded services for affiliated hospitals aim to meet medical staff's needs for library knowledge services. Service locations shift to the hospitals themselves. Considering clinicians' busy schedules and difficulty accessing the university library, we integrated resources and services to proactively enter hospital clinics and wards, embedding library resources into clinical workflows. Borrowing records, due dates, notifications, and announcements are all integrated into a mobile client, presenting integrated resources clearly to hospital users who can conveniently access knowledge and services. This embedded service solves the problem of clinicians lacking time to visit the library and delivers integrated services directly to medical personnel, enabling them to customize, download, and transfer materials and utilize academic resources through this platform. Additionally, we established exclusive service platforms and document delivery groups for three affiliated hospitals, actively assisting in their library development and providing literature retrieval, borrowing, and database training services.

3.5 Embedded Services for Citywide Primary and Secondary School Students: Attracting Students to the University Library

Libraries possess abundant literature and spatial resources. The *Regulations on University Libraries* issued by the Ministry of Education states that "university libraries should open to community and public readers whenever possible," pro-

viding policy support for our services to citywide primary and secondary school students. Since 2012, our library has signed cooperation agreements with the Qiqihar Education Bureau to open to all primary and secondary school students and teachers. We provide themed class meeting spaces, literature services, database training, mobile library services, borrowing services, and university library tour experiences. Special activities for left-behind children allow them to experience the unique aspects of a medical library, browse medical literature, and appreciate the charm of medicine. Selecting assistant librarians brings surprises to participating students. These services differ from traditional circulation services and have positively and profoundly impacted primary and secondary education.

These embedded service practices run parallel to traditional library services as extensions and expansions. Embedded services require librarians to possess knowledge backgrounds similar to their users, embedding themselves in user tasks and aligning with user objectives to provide needed, value-added, personalized services anytime. This experimentation represents an innovative service process whose advantages—horizontal and vertical extension, diversification, and personalization—accumulate to form distinctive service models and operational methods that ensure smooth embedded service delivery.

4. Reflection and Outlook

Medical library embedded services emerge and develop based on user needs, representing knowledge services resulting from highly integrated library components. Under the embedded service model, library service philosophy is renewed and enhanced. Services should not only respond to needs but also proactively identify them, concretizing potential needs based on disciplinary development and providing forward-looking services. Conceptually, services must synchronize with or anticipate needs—this forward-looking philosophy is key to ensuring proactive service.

Service content continues to extend and expand, and librarians' roles will gradually upgrade to various levels and types of informationists according to the degree and scope of embedded services. Under the embedded service model, “the library is a growing organism”—library productivity is enhanced, librarians' emerging professional scope expands, and their roles gradually evolve into literature and information service personnel and knowledge service experts across different domains and levels.

Personalized embedded service models represent the future direction of medical library services. Research methods and service frameworks will continue trending toward three-dimensional diversification. User needs are personalized, requiring libraries to provide customized services. This demands embedded service personnel possess multidisciplinary knowledge backgrounds to deliver user-needed services. Therefore, citing different theories and methods from various perspectives, exploring interdisciplinary research approaches, and attempting

cross-disciplinary service research from multiple angles and levels will drive continuous improvement and development of medical library embedded services.

References

- [1] COOPER D, CRUM JA. New activities and changing roles of health sciences librarians: a systematic review, 1990-2012[J]. Journal of the Medical Library Association, 2013, 101(4): 268-277.
- [2] KNAPP PB. A suggested program of college instruction in the use of the library[J]. The library quarterly, 1956, 26(3): 224-231.
- [3] SOWELLS L. LATCH at the Washington Hospital Center, 1967-1975[J]. Bulletin of the Medical Library Association, 1978, 66(2): 218-222.
- [4] LAMB G. And now, clinical librarians on rounds[J]. Hartford hospital bulletin, 1975, 30(2): 77-86.
- [5] DAVIDOFF F, FLORENCE V. The informationist: a new health profession?[J]. Annals of internal medicine, 2000, 132(12): 996-998.
- [6] BANKS MA. Defining the informationist: a case study from the frederick l. ehrman medical library[J]. Journal of the Medical Library Association, 2006, 94(1): 5-7.
- [7] POLGER MA. The informationist: ten years later[J]. Journal of hospital librarianship, 2010, 10(4): 363-379.
- [8] HARRISON J, BERAQUET V. Clinical librarians, a new tribe in the UK: roles and responsibilities[J]. Health information & libraries journal, 2010, 27(2): 123-132.
- [9] BRETTE A, MADEN-JENKINS M, ANDERSON L, et al. Evaluating clinical librarian services: a systematic review[J]. Health information & libraries journal, 2011, 28(1): 3-22.
- [10] GUISE NB, SATHE N, JEROME R. Envisioning the Information Specialist in Context (ISIC): a multi-center study to articulate roles and training models[EB/OL]. [2018-05-28]. http://c.mlanet.org/2008-may/isis_{{{final}}}{{report}}}{{feb06}}.pdf.
- [11] RANKIN JA, GREFSHOIM SF, CANTO CC. The emerging informationist specialty: a systematic review of the literature[J]. Journal of the Medical Library Association, 2008, 96(3): 194-206.
- [12] GREGORIO GONZÁLEZ ALCAIDE, INÉS POVEDA PASTOR. Emerging roles in library and information science: consolidation in the scientific literature and appropriation by professionals of the discipline[J]. Scientometrics, 2018, 116(1): 1-19.
- [13] ZHOU Xiaojie, LIU Haixin, ZHANG Chunyang. Review of embedded service research in Chinese libraries[J]. Library Science Research, 2012(12): 19-22.

- [14] ZHOU Jianchang, HUANG Xiuqing. The trend of subject services: embedded service model—taking Xiamen University Library as an example[J]. Sci-Tech Information Development & Economy, 2010, 20(16): 31-32.
- [15] LIN Yan. Application of library embedded services in cadre education[J]. Journal of Library and Information Science in Agriculture, 2010, 22(9): 294-297.
- [16] SUN Tan, CHU Jingli. Theory and Method of Library Embedded Subject Services[M]. Beijing: Science Press, 2015.
- [17] CHU Jingli. Subject librarians' cognition and analysis of embedded subject services[J]. Library and Information Service, 2012, 5(3): 1-8.
- [18] WEN Li. Research on Embedded Services in Medical Libraries[D]. Changchun: Jilin University, 2016.

Note: Figure translations are in progress. See original paper for figures.

Source: ChinaXiv — Machine translation. Verify with original.