Reference and Instruction Services Go Virtual as a Form of Outreach: Case Studies from Academic Libraries

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The New Virtual Environment

ACADEMIC, SPECIAL, AND PUBLIC LIBRARIES CATER TO A CUSTOMER BASE THAT IS NO LONGER DEFINED BY LOCATION. USERS OF INFORMATION ARE GLOBAL CLIENTS WHO ARE CONTINUOUSLY CONNECTED TO RESOURCES AND ARE NOT RESTRICTED TO ACCESS IN ANY PHYSICAL FACILITY. CONVERSELY, UNDERSERVED LIBRARY USERS, THOSE WHO LIVE IN IMPOVERISHED COMMUNITIES, RARELY VENTURE INTO LIBRARIES TO MAKE USE OF INFORMATION RESOURCES; NOR DO MANY HAVE PERSONAL COMPUTERS TO ACCESS RESOURCES REMOTELY, SINCE MANY CONFRONT ECONOMIC, SOCIAL, OR EDUCATIONAL CONSTRAINTS.

But underserved users may also include college and university students and faculty who do not recognize the value of visiting their campus library, either electronically via the campuswide intranet or in person, and who may choose instead to consult favorite resources on the Internet or personal collections in colleagues' offices or friends' dorm rooms. These students and faculty are missing out on many new resources packaged in a variety of user-friendly media. If they are made aware of the many products and services available to them, they can begin an "information journey" to explore online resources of value to their work and professional and personal interests. Present-day academic libraries, in particular, offer top-notch electronically designed outreach programs. They demonstrate how libraries have become high-tech data mining services, information training and navigation centers, and experts in developing high-speed resource sharing and document delivery systems, connecting users to pertinent information via customized, Web-based research portals.

Two outreach activities, hosted on library websites and well-received by faculty and students alike, are the "online reference desk" or "virtual/digital reference," and "online/virtual instruction." This article discusses these popular information services as representative outreach programs and describes how they operate at academic institutions. The Institute of Paper Science and Technology's (IPST) Haselton Library and Knowledge Center, in Atlanta, Georgia, is the main case study presented. The IPST is a graduate school and research institute that supports scientific research and business studies for the paper industry. The Haselton Library is an intriguing case study, as it functions both as an academic and special library, serving the Institute's 25 faculty, 67 students, and approximately 50 research staff, as well as a global corporate clientele involved in the pulp, paper, and related industries. One full-time library manager serves as the information consultant and instructor of library services, with a support staff of a digital resources coordinator (who designs and manages the library's intranet resources) and four paraprofessionals (who handle cataloging, document delivery, interlibrary loan, and serials management). To develop and benchmark its information training program, the Haselton Library selected applicable performance standards approved by the Association of College and Research Libraries (ACRL) and published in Information Literacy Competency Standards for Higher Education (January 2000). The results of the benchmarking are included in this article.

Outreach—An Introduction

"Outreach" has been defined as "bringing services out to where they are needed" (Trotta 1993, p. 1). The origin of outreach programs can be traced to public libraries, where library branches and bookmobiles served the information needs of the communities (Trotta 1993). Academic outreach, on the other hand, is a relatively new phenomenon and may have a variety of functions (Cruickshank 2001). For example, at the University of Michigan in Ann Arbor, outreach has been characterized as the design of services to reach patrons outside the library, whether undergraduates in their dorms or faculty in their departmental offices (Cruickshank 2001). Faculty outreach in an academic setting is necessary for several reasons: (1) faculty may introduce new bibliographic and information-seeking concepts; (2) faculty are a particular and primary group of information seekers for academic libraries; (3) faculty are information gateways to student library users, which is the largest user group for academic libraries; and (4) working directly with faculty is a crucial aspect of the changing role of information professionals (Lipow 1992).
Faculty can generate enthusiasm for research service initiatives and influence the use patterns of students, which will result in improved information-seeking skills and increased use of library resources. In addition, library staff can coordinate and nurture instructional partnerships with faculty and students from which both prosper intellectually.

In building a strategic alliance between faculty and library, it is common to find an outreach librarian on staff—someone whose time is devoted to developing programs for faculty, students, and researchers. At George Washington University in Washington, D.C., the faculty outreach librarian coordinates brown bag lunches and makes “house calls” to key administrators to demonstrate services (Cruiickshank 2001). Librarians also design websites as outreach tools, opening access to numerous products and services through a variety of user-friendly portals. Increasingly, academic libraries use the Web as a platform from which they can provide one-stop access to a dynamic platform of electronic resources and services (Lilly and Van Fleet 1999). Internet-based technologies greatly enhance the ability of libraries to meet their outreach goal of “bringing services out to where they are needed.”

Further evidence of outreach efforts can be found in the interactions between the reference librarian/information consultant and the user as they transact in cyberspace; this is very different from the traditional reference desk, which functioned as a service point for the face-to-face “reference interview.” The interview gauged the interests of the end user through ongoing dialog with the librarian to explore relevant resources. The online reference desk supports the same kinds of customer-focused research initiatives, but it is an integral part of the new virtual library—a library without boundaries, transcending the four walls and serving customers anytime, anywhere.

Customers of online reference services are found in academic settings, corporate environments, public libraries, and home-based operations. Their need for information is continuous, although professional research staff usually respond during business hours: 7:00 a.m. to 6:00 p.m., Monday through Friday. Using collaborative software, these customers can communicate with each other and with information professionals to assess relevant resources that match their areas of interest, whether the publications are in full text on the Web, in digital format via the library’s online catalog, or in the library’s extranet, an external portal of licensed resources usually restricted to defined users. Online reference is in demand and has become one of the most popular outreach services in today’s academic libraries.

Model Programs

The real-time/live-online reference services of some academic libraries serve as models. In September 1999, no more than five libraries had implemented any kind of live virtual reference service, or even knew what that was (Coffman 2001, p. 149). Because of the nature of these services and the global customers they serve, whether in an academic or public library setting, online reference is a form of outreach. Library public services are being reengineered to think less of services associated with location and focus more on services that can be performed both electronically and in locations remote from the library building (Snowhill 1996). North Carolina State University (NCSU) Libraries, for example, launched its real-time online reference service on January 8, 2001. In 2001, NCSU had an estimated 1,200 distance learning students, some of whom would never visit the library (Boyer 2001, p. 122). Using the Virtual Reference Desk produced by Library Systems Services LLC, staff were able to evaluate the live online reference service and note a few areas for improvement, such as how best to handle multiple simultaneous live requests, the need for expanded hours, and a reexamination of the design of the library websites and catalogs to help patrons who will not ask reference questions, but may use online reference services (Ciccone 2001).

The Haselton Library and Knowledge Center of the Institute of Paper Science and Technology responds to its global customers by offering a wealth of information resources online and creating access via customized portals. Where resources exist, services are needed that support information users in seeking, locating, navigating, and using these materials properly. The library constructed a program of activities to bring its global clients up to speed on using online information resources and provide them with online reference support and research assistance. The clientele were employees of the paper and related supporting industries, scientific and technical users, management, and faculty and students of the Institute.

The Haselton Library began its implementation of virtual reference by investing much effort into responding to reference inquiries via the Internet through the IPST Member Channel (an extranet application accessible only by IPST’s many global research partners and supporters); the Institute’s “Inside IPST” intranet; and its public website (www.ipst.edu). A general email address (library@ipst.edu) was established and links to it were provided on the websites. In the beginning, the means by which users communicated reference inquiries changed rapidly—quickly converting mostly to e-mail activity. It did not
take long for customers to catch on to using the e-mail reference links between 7:30 a.m. and 6:00 p.m., Eastern Time, Monday through Friday. Responses are generally made within the same business day.

Additional outreach efforts include an annual open house, coordinated to demonstrate new products and services and provide real-time virtual reference assistance; hands-on sessions; and library tours. An open house event can strengthen a library’s outreach potential (Odom and Strout-Dapaz 1999). Through the open house, libraries can identify potential customers, while existing customers appreciate the opportunity to share their thoughts on product improvements and information needs. These activities require that library staff work together to prepare the customer to be information-ready.

As part of the overall program to bring online information resources to the global IPST community, the Haselton Library helped the Institute develop Web portals for specific clients: the IPST Member Channel, the “Inside IPST” intranet, and the IPST public website. These sites bring an array of online resources and service points to customers. Most of the licensed online resources are in “Inside IPST” for the benefit of internal customers; some are provided through the Member Channel, making them directly available to employees of supporting companies and research partners. Other than the library catalog, no online information resources are currently available on the public website. Each of the three sites has a full array of access points to the library’s public services, such as reference, research assistance, document delivery, interlibrary loan, a translation service, and other forms of support. The work of the library extends beyond simply maintaining the library portion of these sites; in fact, the library serves as designer, information architect, and content manager of these three sites for the entire Institute. In this way, the Haselton Library has been an example of the changing role of libraries in the world of information and its users—as a Web-based information architect as well as an instructional partner to faculty, an information navigator, and a teacher of the Internet.

The Web portals were designed to provide access to online resources and search mechanisms for clear, logical navigation of sites. Site navigation is an information-seeking activity practiced by librarians with training in information architecture, adding value by improving the navigability of the site and thus users’ ability to locate information. Electronic resource management is also a key role, coordinating the licensing of and online access to e-journals, databases, the library catalog, commercial and industry-related information portals, and relevant government, nonprofit, and corporate websites. Information consultants created the Directory of IPST-Reviewed Links, selecting, reviewing, and describing websites of potential interest to the IPST community. The directory filters out the best and most relevant websites, categorizes them, and provides links to them for end users.

Through these activities, the library’s public services are offered to all its clientele: local and global; academic, corporate, and industry-related. In approximately three years, the Haselton Library went from delivering access to two electronic resources to delivering more than a thousand online resources. To accomplish this, the library conducted a massive examination and overhaul of reference, instruction, and end user behavior patterns.

The information consultants at IPST established information-sharing alliances with their counterparts at the Georgia Tech Library and Information Center of the Georgia Institute of Technology. The professionals collaborate on current library practices for such services as interlibrary loan and joint access to electronic journals and databases. The Georgia Tech Library offers virtual reference through its “Real Time Reference” and “Ask a Librarian” options. “Real Time Reference” is available during library hours. Information consultants respond to questions in real time, offering assistance with brief reference questions only. The service uses AOL’s Instant Messenger software. “Ask a Librarian” is an e-mail reference service. Information services staff respond to questions within one business day, seven days a week. The Georgia Tech Library is in the process of reviewing new, more advanced software to replace its present service.

Cornell University Libraries also developed digital reference initiatives for 2000–2002. The planned focus was to provide around-the-clock access to high-quality digital reference services from anywhere, with reference service as a key component of the digital library and digital reference as a “high-tech and high-touch” service (Saunders 2001, p. 16). In-person reference transactions dropped significantly at Cornell as users expected digital services 24 hours a day, seven days a week. In the Cornell initiative, staff noted that there is a lot to learn about user behavior, user needs, and cost models as libraries develop new models of service and redefine their definitions of primary users (Saunders 2001).

In examining online library instruction programs, we find related initiatives in place at most academic libraries, which have been transformed over the years to one...
variety of self-paced programs via library intranets. In the real-time online library instruction program at the Florida Distance Learning Reference and Referral Center (RRC), the "chat room" environment serves as a virtual classroom. The RRC uses Conference Room Professional Edition by WebMaster to allow users to communicate as they move from one room to another. Prewritten scripts and additional staff are also used (Ciccone 2001).

Another model instruction program is the information literacy program at the Haselton Library and Knowledge Center of the IPST, launched in August 2001. Instruction was revamped to include specific instructional modules to improve the skills of faculty and student in online information seeking, navigation, and use. The program consists of weekly drop-in clinics, workshops, and brown bag lunch sessions that cover areas such as Internet searching, reference tools, e-journal use, database search strategies, and the library's reviewed links to websites. Users can participate in these programs from their desktops, if they prefer, without ever leaving their offices or classrooms. The team leader prepares discussions on a variety of topics, including the items already mentioned, library policies, CD-ROM products, the library's digital collections of IPST-produced research reports and papers, and the statewide GALILEO system (Georgia Library Learning Online). The program also includes a discussion of the Georgia Tech Electronic Library (GTEL), as IPST is an Internet domain on the Georgia Tech campus and has full Web access to the online resources of the Georgia Tech Library.

Online tutorials were also created to direct users to instructional guides for book renewal, Internet searching, database search strategies, reference tools, and WebCat. Links to online tutorials at other libraries are also provided. One excellent tutorial for Internet-savvy searchers is the Teaching Library at Berkeley (University of California at Berkeley 2003). Sample topics are What is the World Wide Web?, How Do I Connect to the Internet?, and Using Search Engines. Users can choose the tutorial that best matches their Web interest and knowledge level.

The Haselton Library team leader facilitated an evaluation of each participant's performance for specific learning abilities, related to the use of multimedia resources available in the library. Preselected standards, extracted from Information Literacy Competency Standards for Higher Education (Association of College and Research Libraries 2000) were used to measure participants' research skill proficiencies. The team leader selected standards 1, 2, 3, and 5, which cover applicable performance indicators and outcomes characteristic of the IPST user. Following are evaluative summaries for each selected standard based on observations and discussions with IPST participants in clinics and point-of-service interactions. Each summary focuses on end user applications of the following information-seeking skills: database searching, Internet searching, Information Gateway navigation, electronic journal access, IPST Reviewed Links access, WebCat navigation, and reference material use. The learning environments include instruction clinics and point-of-use interactions. The statements apply to the participant groups rather than individuals.

Haselton Library-Information Literacy Program Evaluation Statements

**Standard 1.** The information-literate student determines the nature and extent of the information needed.

Most participants had performed preliminary research on topics related to coursework, having already conferred with advisors, and some were involved in ongoing research projects. The review of published literature for research topics—which includes accessing databases, the Internet, EBSCO host, and other resources—was a primary discussion in clinics and point-of-service interactions and was a major concern of end users. Most participants had reviewed their favorite relevant sources before attending clinics. Some had consulted with their instructors or the information consultants to gauge preliminary findings. As a practice, the team leader reviewed popular industry reference resources, both print and electronic. All participants could articulate their research interests. Participants had preselected keywords for literature searching; however, most had not consulted the Thesaurus of Pulp and Paper Terms and were not familiar with it as a resource for keyword strategy development.

Since the majority of participants use both print and electronic resources, the team leader discussed the value and difference of a number of information resources in a variety of formats. Participants were not aware of basic criteria for judging the quality of Internet material and resources, and they were not familiar with reliable websites that offer guidance in Internet use. The new IPST Digital Collections was introduced to users through announcements and special clinics organized by the digital resources coordinator. With regards to user services, participants who had been at the Institute longer than a year were familiar with interlibrary loan and translation services. They were familiar with WebCat but not some of the newer search options. All participants were interested in learning about new resources if those resources supported their research endeavors. Those who need resources for projects and coursework generally agree to pay fees, if necessary, to get copies of articles and book loans. Participants were
familiar with general publishing procedures for authors, such as "instructions to authors" guidelines and deadlines. Additionally, they expressed an interest in keeping abreast of new technologies in information organization and access.

**Standard 2.** The information-literate student accesses needed information effectively and efficiently.

PaperChem, PIRA, SciFinder Scholar/Chemical Abstracts, AGRICOLA, and Current Contents are some of the most popular industry databases available for subject literature searches. Users were briefed on the scope of each. GALILEO and GTEL databases were also discussed in clinics, as users were not thoroughly familiar with these services. Participants used a number of sources to select appropriate search terms to retrieve relevant citations. The *Thesaurus of Pulp and Paper Terms*, for example, is widely consulted throughout the industry for keywords used in PaperChem; however, users were not thoroughly familiar with it as a resource. Other databases, accessible through Dialog and the Scientific Technical Network (STN), provide other thesauri related to the subjects covered. Most participants had used the earlier version of PaperChem, but were not familiar with the new Paper Village 2 product. Construction of search strategies, using Boolean, truncation, and other search techniques, was not a proven skill among participants. Most participants had attended the Open House and/or met with the information consultants for guidance, but were not confident searchers with Boolean and other techniques.

Additionally, most participants indicated that they do not routinely keep abreast of databases available to them through Haselton. End users rely on the information consultants to tell them about new and relevant resources. Participants were aware that online database services are available through Haselton, and end users routinely rely on the information consultants to offer guidance and run literature searches for them or to direct them to relevant resources. They were not familiar with all the databases through GTEL, GALILEO, Dialog, and STN. Users were somewhat familiar with EBSCO Online's "journal search" but were not adept in using the "article search" option. Most participants were familiar with other library services, such as interlibrary loan, document delivery, translations, and WebCat. Library policies and staff contacts were shared with end users new to IPST. Institute-wide announcements alert users to new products and services and to changes that affect access. Participants were capable of refining search strategies by modifying keywords, but needed assistance from the team leader. In some cases, a broadening or narrowing of search terms was needed to improve retrieval. Participants were also interested in limiting by qualifiers, such as publication year, language, or document type.

**Standard 3.** The information-literate student evaluates information and its sources critically and incorporates selected information into his or her knowledge base and value system.

As most participants were graduate students and faculty, thinking critically about resources was quite common. However, locating quality resources on the Internet was not widely practiced. The team leader drafted special handouts addressing Web-searching issues and suggesting quality selection criteria for Internet resources, as most users were not familiar with screening techniques used to select top-quality resources in the vastness of the Web. Checking source authority, for example, is important to guarantee the accuracy of information retrieved.

**Standard 5.** The information-literate student understands many of the economic, legal, and social issues surrounding the use of information, and accesses and uses information ethically and legally.

Participants appeared to be cognizant of the proper use of Institute resources and services. Periodically, IPST's IT group e-mails reminders with regard to proper use of equipment and so on. Popular industry business-to-business (B2B) and e-commerce sites were discussed; Paperloop.com and ForestWeb, for example, offer useful industry information to both subscribers and nonsubscribers. Dialog and STN information services, commercial fee-based services, were also covered. Copyright issues were covered briefly, including a discussion of Haselton's TRS account with the Copyright Clearance Center (CCC) for photocopy activities. IPST's general counsel is also consulted for intellectual property matters. Participants were aware of the various style manuals IPST recognizes beyond its own—those of the American Chemical Society (ACS), the American Psychological Society (APS), and the Modern Language Association (MLA). With minimal instruction, participants demonstrated proper login procedures to access e-journals and databases. Participants were directed to "use restrictions" on the library's intranet pages for e-journals and databases. It has been a proven practice for end users to contact Haselton staff for specific questions about access to resources. Additionally, it sends out Institute-wide e-mail reminders to internal users regarding compliance guidelines. IPST end users comply with style standards outlined in style manuals of the ACS, APA, MLA, and IPST. The team leader assisted with source referencing on occasion, but generally referred users to editorial services staff.

In summation, users were comfortable with their favorite industry resources on the Web in multimedia formats. They were enthusiastic about becoming avid and informed information gatherers, particularly through the use of database searching and by establishing fluency with GALILEO and GTEL. However, they...
needed improvement in formulating search strategies using Boolean logic and applying customized database searching techniques. Attendees were not familiar with natural language programming search techniques, which have become quite popular with some information service vendors. A small percentage of users could suggest databases they had used for topical searches through recommendations made by the information consultants. All participants could articulate their technical subjects and topics of interest. The level of user awareness of resources at their fingertips via the library intranet was impressive—users appeared to be savvy regarding the library’s intranet.

Where do we go from here? Libraries will be required to review, in an ongoing fashion, all aspects of their information literacy programs to ensure that they meet the needs of users. As user needs change, product content will also, along with product packaging and access platforms. Products exist to meet user needs across a myriad of subject disciplines and technical capabilities.

Conclusion
While many of the model outreach programs described here are meeting the current needs of users, it is imperative that information professionals continue to enhance the critical skills they need to support all aspects of library-related services and continue to review the information needs of users. To meet user needs in a virtual environment, the information professional must update his or her knowledge and skills in specific areas, such as knowledge management, electronic resource sharing, metadata, and Web page design and management. Furthermore, since many information seekers rely on resources found on the Web and in an array of multimedia formats, information professionals will need to have enhanced Web power searching capabilities and expertise across a broad spectrum of industry databases. End users require integrated access portals across a broad spectrum of subject disciplines; continuous exploration of resource content, repackaging, and pricing models is necessary to formulate optimum content platforms. Management requires skills in competitive and business intelligence, current awareness sourcing, and reviewing, critiquing, and customizing quality websites. Information professionals must be prepared to meet the future challenges of the information industry in the new virtual environment.

References


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