The Future is Now: Reference Service for the Electronic Era

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Introduction
Electronic reference service has the potential to transform library reference service in a way never before experienced and, in some libraries, is already changing the face of reference service. Digital or electronic reference has been mentioned in the library literature since the 1980s. According to a 1999 survey by the Association of Research Libraries (ARL) on the use of electronic reference service in member libraries, the majority of ARL libraries offer some sort of electronic reference service. Seventy-eight of the 122 ARL libraries responded to the survey and seventy-five (96% of respondents), indicated that they offered some sort of electronic reference service.1

For purposes of this discussion, electronic reference is considered any type of reference service designed for remote users and linked to a specific site on the library’s Web site.2 Electronic reference includes several types of reference service ranging from e-mail, chat, e-commerce Web contact center software, to videoconferencing services. The level of service and the response time varies from software to software just as it does from institution to institution. There is currently no common denominator to define quality electronic reference service although there has been an attempt to set standards for the Virtual Reference Desk AskA Consortium.3 What is known, however, is that the environment in which reference is conducted is changing, perhaps more than ever before in the history of reference service. Approximately 15 years ago, a major reference-reform discussion began leading to some successes and failures in reforming reference.4 The changes implemented as a result of these reforms were baby steps when seen in the light of the potential of electronic reference which according to Joe Janes, "is about to evolve in a profound and exceptional way."5

Advances in technology have been the major impetus for electronic reference service that provides the users with access to a knowledgeable librarian at the user’s convenience rather than just during hours when the reference desk is open. People’s attitudes and expectations have been changing. Rather than businesses and services setting hours for their own convenience, they are now setting their hours or offering services for the convenience of the user who wants to be able to get what he or she wants when he or she wants it. Academic libraries have been reluctant to jump on this bandwagon and understandably so. The extension of library services to remote users during times when the library is not normally open has policy and staffing implications that need to be carefully considered.

At the University of California, Irvine (UCI) the Libraries have offered e-mail reference service since September 1999...
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ber, 1998 and during 2000 became participants in the Metropolitan Cooperative Library System (MCLS 24/7 project funded by a Federal LSTA grant administered by the California State Library. The MCLS is an association of libraries located in the greater Los Angeles area which cooperate in providing library services to residents in participating jurisdictions. The purpose of the 24/7 Reference Project is to provide libraries with the tools that they need to do reference on the Web. MCLS has purchased call center software used in e-commerce to demonstrate the feasibility of applying this software to libraries. A number of libraries are participating in this project including the University of California, Irvine (UCI) and its sister campuses at Los Angeles and Davis. The University of California libraries are not actually participating in the 24/7 project but are focusing on the adaptation of this software to academic libraries.

E-mail Electronic Reference

Early efforts with electronic reference involved e-mail accounts established at reference desks that allowed users to dial-in from home or a terminal elsewhere on campus to ask reference questions electronically. In their article, "Librarian in a Box: The Use of Electronic Mail for Reference," Julie Still and Frank Campbell describe the beginning of electronic reference services in research libraries. Most of the early e-mail reference services began in health science libraries and slowly expanded to other types of libraries. One reason for the slow expansion was the lack of visibility of the service, the slowness of response time and the difficulties of doing a reference interview electronically. An ARL Survey in 1988 indicated that of the 79 responses, only 16 libraries (20.25 percent) offered e-mail reference service. This is a far different percentage than that received in the more recent 1999 ARL Survey. It was not until the advent of the World Wide Web that electronic reference service began to make major advances.

There have been numerous articles written on e-mail reference services and its advantages and disadvantages. Its ease of use and universality are the reasons that it is the most heavily used type of electronic reference service. Nearly everyone is familiar with e-mail and feels comfortable using it. The 1999 ARL Survey indicated that most research libraries have provided some type of electronic reference service for three to five years with only 30% of the responding libraries offering the service for more than five years. Although e-mail reference is the most common means of submitting questions, most libraries link to e-mail through a Web form on their library's home page that also serves as the primary means of publicity for the service.

The 1999 ARL Survey estimates that the average number of questions per research library (adjusted for high number of questions received by the Library of Congress and the National Library of Medicine) is 67 per month. While most academic libraries report a gradual increase in the number of users of electronic reference, some have even reported no increase or a decline. At a few academic libraries, librarians answer e-mail during hours assigned to the reference desk. However, most academic libraries do not have the luxury of being able to do that. E-mail reference questions for most libraries are answered behind the scenes and are, often, an add-on to the librarian's reference desk responsibilities.

At the University of California, Irvine, the number of e-mail reference questions grew by 22% during the second year and the service has shown an additional 20% increase during the first four months of the third year of the service. This is an increase from an average of approximately 44 questions per month to over 70. This is a modest growth rate and one that we have been able to handle. We have found that in order to have a successful e-mail reference service, as with anything else, a lot of hard work and organization need to be part of the service.

The UCI Libraries developed an electronic reference services team to organize and implement the e-mail reference service in 1998. This group was composed of six individuals, three from the science library and three from the main library. This original team with four librarians and two library assistants had approximately one month to organize and activate the service. By reviewing the e-mail forms used by a number of other academic libraries, UCI designed a form for e-mail questions, worked with the systems department to make arrangements for a specific e-mail account as well as a listing of the "Ask a Librarian" service on the front page of the UCI Libraries’ Web site, and began answering questions all within a period of one month. There was also considerable behind-the-scenes work that needed to be done to set up the folders in Pine, which was the e-mail system in use by the libraries at that time, developing templates for frequently asked questions, and discussing a protocol for answering the questions.

We decided at the outset that we would respond to all questions within 24 hours, except for those received on weekends and holidays. That put a certain amount of pressure on all of us who prided ourselves on answering the questions as quickly as possible. During the first weeks, we examined
all of the questions and the responses as a group to help develop a similar style of answering questions and also to come to agreement about the best way to respond to some of the questions. We discussed which questions we would answer from persons not affiliated with UCI and which we would refer to another source, such as the Internet Public Library. Our policy states that we will only answer questions from non-affiliated UCI users if the question is about the UCI campus or library holdings. In reality, we found ourselves answering questions that we found to be easy ones and referring only those that involved lengthy research. By reviewing the questions after they were answered, we were all able to come to a general understanding so that some librarians did not answer questions and others refer them. We built a certain amount of trust into this system so that each librarian could use his or her judgement about how each question was handled while also having general guidelines. These guidelines covered such things as responsibilities of team members for answering questions, protocol for answering questions, making referrals, and answering questions from users not affiliated with UCI. A few samples from the guidelines include:

- Each team member is responsible for checking the inbox of “Ask a Librarian” frequently throughout the day that they are assigned to answer questions and respond promptly to all questions. It is our policy to respond to all questions within 24 hours, except on weekends and holidays.

- Remember that you do not have the opportunity to ask the person questions as you would in a reference desk encounter but try to provide an answer to what you think their question is. Be sure to let them know when the question is unclear, and that you are responding to what you believe they have asked.

- Never simply forward a question to another library staff member. If you need to consult with other library staff, refer to the e-mail address or phone number of the bibliographer, class, loan desk, interlibrary loan, or other information that we cannot access without a password.

- Collection development questions and suggestions should be referred to the appropriate bibliographer. Forward a copy of the original question to the bibliographer with a brief explanation of why you are referring the question. To respond to the person asking the question, use the template “Collection Development Referral.” Include the name of the bibliographer, phone and e-mail address on the template. Examples of questions in this category include: “Why don’t we subscribe to this electronic journal?”. “Can the library buy this book?” Ask librarian to send back the response to “Ask a Librarian” so that there will be a record of the response.

The responsibility for answering electronic reference questions in the UCI Libraries is centralized in the electronic reference service team. One member of the team is assigned a day of the week for which they have responsibility for answering questions received during that day. Three of the team members are in the main library that includes subject areas in the humanities and social sciences, while the other two are members of the science library research and instruction department. One of the team members in the main library is a government information librarian. Each of these team members takes a day and answers any questions that come in that day, regardless of the subject matter. This has worked exceptionally well since we have found that although 76% of the questions could be categorized as reference questions, less than 5% of the questions needed to be referred to a subject librarian. We have a standard policy that all collection development questions are referred to the appropriate bibliographer but not many of this type of question have been received. Approximately 17% of the questions received concern a function performed by access services. Referrals are most frequently made to access services for very specific questions about billing or other information that we cannot access without a password.

The UCI Libraries centralized format for answering questions runs contrary to that of other research libraries as described in the ARL 1999 Survey. In the survey, decentralized responsibility for answering questions was definitely the method used by most libraries. The UCI Libraries originally intended to have one person receive the questions and refer them to others. We began with a tiered approach with a highly trained library assistant referring the questions. Although this person had many years experience, she did not feel comfortable answering and referring the questions, so we changed to the centralized format. There were several other reasons why we adopted this format:

- The e-mail system being used did not provide for tracking questions referred to others and there was no means of
assuring that referred questions were answered within the 24-hour time frame.

- The majority of the questions were general questions of the type received and answered at a reference desk and not referred to a subject specialist.

- The Web is a great equalizer and the majority of questions could be answered with Web resources. This increased the ability of the librarians to answer questions in fields that they normally did not.

- The wide variety of questions received increased the challenge for participating librarians.

When questions were ones that would normally be referred to a subject specialist of the type that would be more suitable for research consultation, the user was either referred to the appropriate subject specialist or it was suggested that they make an appointment with a librarian for a half an hour research consultation.

Evaluation of the “Ask a Librarian” service was done through the means of two surveys sent to UCI affiliated users of the service. We decided that since UCI users are our primary clientele, they were the group from whom we wanted to get input to help us improve the service. The two surveys served to reinforce that we were on the right track in our policies and guidelines. However, some of the respondents wanted quicker response time. One person to whom a response was sent within a half an hour of the question complained that the response time was not quick enough for her needs.

The use of e-mail reference taught librarians at UCI involved with this project several valuable lessons that are transferable to real-time reference service. Transferable knowledge and skills include:

- experience in conducting electronic reference interviews;
- experience in defining standards for quality responses;
- knowledge of the type of questions most frequently asked electronically in an academic environment; and
- knowledge of how best to structure and conduct user surveys to obtain feedback to help improve the service.

Recognizing the need to move beyond e-mail reference service to satisfy the evolving needs of its customers, the electronic reference services team began to look into various chat and e-commerce software programs that were available on the market and were being used by other libraries.

From e-mail to Web Contact Center Software

A number of academic and public libraries are now offering real-time reference using chat or other type of live interactive software. There are close to 50 libraries currently providing users with real-time reference. The most popular software appears to be Human Click and Live Person Chat.

Just as the UCI Libraries began to explore various possible new software products, we heard about the Metropolitan Cooperative Library System (MCLS) project using Webline in a test of 24/7 reference service. We met with Susan McGlamery and Steve Coffman and agreed to be a test site in their project using Webline, a call center Web contact software used by e-commerce firms, such as Land’s End. With this software, a Land’s End agent can chat with the customers and share with them pictures of items that matched the buyer’s specifications. This is an extremely powerful product. Shortly after the beginning of the MCLS test, Webline was purchased by Cisco Systems and became part of the Cisco family. The product is now called Cisco Collaboration Server. Due to the merger, Cisco has not developed a planned upgrade to this software but that upgrade is now expected by fall 2001.

Webline is mounted on a server at MCLS. Both UCI and UCLA access Webline through this server. Progress made by the libraries in testing this product have been dependent upon MCLS programming. However, each library has its own login and passwords, is able to modify the opening screens and greetings, and each librarian can be identified by name in the chat messages.

It did not take UCI and UCLA long to recognize the potential that this type of Web contact center software has for academic libraries. It not only provides the librarian with the software for real-time chat with the user but also has the ability to mimic reference desk interaction by sharing Web pages so that the user can follow along with a search. One of the advantages of this type of software is that the user does not need any special software to use it. It works with whatever browser the user has. For the librarian, however, not only does the Webline software need to be installed on a server but the browser needs to be Internet Explorer. Netscape does not work with this particular software. Chat messages and Web pages are programmed so that the librarian does not need to repeatedly type the same information or search for the same Web page. At the end of the session, the user receives an e-mail transcript of the session so that they will have the information for future use. Additionally, such software includes the ability to track questions and gather statistics which provides quality control not available with e-mail or reference desk transactions.
However, the three librarians at UCI and the eight at UCLA involved in the test also learned that such software cannot be used off the shelf without adaptation and training on the part of the librarians. Some of the things that UCI and UCLA learned in testing Webline include:

- The multiple windows that open need to be sized so that both the user and the librarian can see the necessary information. This is often confusing to the user who may not realize at first that they need to resize the page.
- The user is asked to grant permission to load Applets. Many users are hesitant to do this because many have heard stories of what can happen when you grant permission over the Internet. If the user does not grant permission, technical difficulties may be encountered.
- The software works best with short, brief questions that can be answered with one Web site that has been bookmarked, for example questions about the best source or index to use to find information on a subject.
- It is hard for the librarian to chat and look for Web pages at the same time. There is the risk that the user will be left waiting for some results while the librarian searches.
- Chat messages (Welcome greeting, “working on your question,” sign-off, etc.) and bookmarks of frequently used Web sites need to be well organized so that the librarian can quickly use them to avoid long pauses while the user waits for information.
- It is difficult to assure that the user is kept informed at all times about what the librarian is doing and some users may become frustrated with the service. There are sometimes technical difficulties and the Web page on the librarian’s browser is not transmitted to the user. The librarian is not aware of this unless the user communicates that the particular Web page was not received and the caller usually doesn’t have any understanding of what has taken place.
- It takes longer to answer questions electronically than in person since the librarian has to type information and also locate Web pages to share with the user.
- Webline works only with non-proprietary sites unless the library notifies each site to which they subscribe of the ISP for the server.
- A bout the time that the University of California libraries were testing Webline, the Bay Area Libraries Project was testing the Virtual Reference Desk by the Library Systems and Services (LSSI), another Web contact center software program. The LSSI software is similar to Webline but is easier to use without the need to resize multiple windows. Steve Coffman, now with LSSI, organized and conducted a test of this software with the Bay Area Libraries Project in which librarians could call a practice site during a specific week to try the software. He reported on this test, held in September 2000, in a message on the Dig_Ref Listserve\(^1\) and also at a presentation at the 2d Virtual Reference Desk Conference in Seattle in October. Some of the things that Steve reported from the Bay Area Libraries Project test indicate some possible trends for future staffing of electronic reference services:

- Librarians need to be well-trained and familiar with both the software and Web sites in order to provide efficient service.
- Librarians found it difficult to do more than an hour of intensive electronic reference at one time.

The figure of one-hour shifts for electronic reference was derived during a very intensive test with a number of callers waiting in a queue. This length of time could vary depending upon the number of questions received each hour but this is a good guideline to keep in mind when planning future electronic reference services.

In November 2000, the MCLS Project switched from testing Webline to testing eGain. This Web contact center software is easier to use than Webline. eGain utilizes Hipbone to connect the browsers of the librarian and the user. The user’s screen is very clear with chat messages appearing in a column on the right hand side with the most recent message appearing first. The user’s screen shows the Web page that is on the librarian’s screen. If the librarian wants to do a search that is not seen by the user, the librarian needs to open a separate window for that search. Otherwise, the caller sees everything that is on the librarian’s screen including all searches. At the end of the search, the caller receives in the chat column, a list of all of the Web sites visited so that the user can go back and review them. If the librarian is busy, the caller is placed in a queue. The software also includes the ability to track questions for quality and statistical analysis. Again, the user needs no special software or browser but the librarian needs to use Internet Explorer 5.0. Netscape was found to be too clunky for the software.

eGain is a very efficient software with excellent potential for academic libraries because of its ease of use. Responses to questions can be done quicker with eGain than on Webline. However, even more than with any of the other Web contact center software programs, the librarian using eGain needs to be knowledgeable and well trained since the user’s browser is connected to the librarian’s browser and the user sees every move the librarian makes on the
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scalability of services or "how can a reference service grow, or scale, to handle a large number of questions, given that traditional scaling mechanisms, such as service hours and geographical constraints run counter to users' expectations on the internet." Discussions about staffing and workload issues need to be considered before a library ventures into providing live reference with Web contact center software given that such a service has the potential to grow very rapidly. While some modifications will need to be made as experience is gained, contingency plans, such as collaborating with other libraries to share workload, modifying times service is available, etc., need to have been considered prior to beginning the service.

UCI and UCLA have are actively testing eGain. Each has undertaken limited tests among a few people on each campus. Both are actively working on building scripts and on the Web pages that will be bookmarked. UCLA is doing a pilot project restricted to IP addresses within College Library. Their policy will be to answer questions using electronic resources. UCI plans a focus group shortly and then hopes to go live a few hours each day during a pilot project. During those times when providing the answer is not available, e-mail reference will be the option offered. These University of California Libraries, including UC Davis, are working together on this project and an U.C.-wide task force on digital reference service will be discussing how a collaborative U.C. electronic reference service might be developed.

In addition to technological issues, libraries also need to consider a number of pragmatic and theoretical facets of electronic reference service. Primary among these issues is the relationship between providing the answers to user queries and instructing users on how to find information independently. Instructing users at the reference desk has always been a hallmark of academic reference service. We need to ask ourselves if that is still a valid concept given our users evolving expectations and desire for instant answers. Most academic librarians will agree that the listing of Web pages received from Webhelp services, such as "Ask Jeeves," are not helpful responses to the majority of questions. Librarians can do better than that, but work still needs to be done in determining those times when instruction is appropriate and those times when providing the answer is the best method of responding to users questions, and then librarians need to build the interface and bookmarks that will provide the most efficient service.

Other important issues that libraries need to consider include the audience served (how can or should academic libraries continue to serve their primary clientele and not those unaffiliated with the university?), costs and technology necessary to support such a service, training, and effective utilization of given resources. Another major issue is scalability of services or "how can a reference service grow, or scale, to handle a large number of questions, given that traditional scaling mechanisms, such as service hours and geographical constraints run counter to users' expectations on the internet." Discussions about staffing and workload issues need to be considered before a library ventures into providing live reference with Web contact center software given that such a service has the potential to grow very rapidly. While some modifications will need to be made as experience is gained, contingency plans, such as collaborating with other libraries to share workload, modifying times service is available, etc., need to have been considered prior to beginning the service.

The University of California, Irvine Libraries has taken the position that the issues surrounding electronic reference service are so important that a full-time position devoted to electronic reference service is warranted. Recruitment is underway for a newly created position of electronic reference services librarian to coordinate and play a leadership role in the expansion of this service. We plan to continue with the centralized electronic team and the new electronic reference services librarian will work with this team to develop plans and implement training and services.

Planning for Implementation of Real-time Electronic Reference Service

The testing that has been done to date on these Web contact center software programs has indicated that the use of such software will drastically change the way that reference is done in academic libraries. However, planning, organization and training are all necessary before such software can be successfully utilized in real-time electronic reference service. In planning for implementation of such a service, some things to keep in mind include:

• In-person reference will continue and real-time reference will be an additional service that may eventually become the library's primary reference service. Planning should include the steps that will be taken to integrate real-time reference with in-person and telephone service.

• Start small. Begin with a small group of librarians for a few hours per week and then when training and service warrant, expand the service adding additional librarians and hours.

• New reference service policies specific to real-time electronic reference need to be established addressing, among other things, the issues of instruction vs. answers.

• As librarians who have answered e-mail or chat reference questions know, each has its own unique style that is
different from answering questions received at the reference desk. Web content sharing software adds another dimension to challenge librarians.

- With Web content sharing software, the librarian needs to assure that the user knows what Web pages the librarian is using and why. Long pauses without chat messages or Web pages without explanation may serve to frustrate the user.

- Training of librarians in the use of Web content sharing software and Web sites will be necessary. Before expanding the group of librarians doing real-time reference, a training program for new librarians needs to be developed and librarians need to demonstrate their proficiency in answering questions with the software if this service is to be successful.

- Training for electronic reference needs to include renewed emphasis on the reference interview since the librarian no longer has the visual and auditory clues that are available in an in-person interview.

- Usability tests should be conducted prior to going live and then the interface should be refined and librarian skills honed so that users see a high quality product from the first time that they log on.

- Privacy issues need to be considered because of the ability of Web content sharing software to collect and retain data about users questions.

- Continuous behind the scenes work needs to be done to maintain the scripts and bookmarks of the most frequently used sites so that questions can be answered as efficiently as possible. Staffing needs to be allocated for this aspect.

- The traditional two-hour reference desk shift may not be appropriate for electronic reference services using Web content sharing software. Each library will need to determine what works best for the number and type of questions that they receive.

- Librarians may find using such features as the eGain Meeting option useful for answering longer, research-type questions, especially if there is a queue of people waiting.

- As with e-mail and chat, libraries need to decide whether to provide decentralized electronic reference service or a centralized service. Again, the type of questions and volume of questions will help each library determine how they can provide the most efficient service to its users.

- Creative use of staffing for reference service should be considered, for example offering only electronic reference during slow hours on the reference desk or collaborating with other libraries to distribute the workload to expand hours that the service is available to library users.

Conclusion

While e-mail and chat reference have had only a ripple effect on academic library reference service, the use of real-time Web content sharing software has the potential to drastically change the face of reference as we know it today. As R. David Lankes describes it, “Digital reference is not simply traditional reference work without the desk... [it] is an attempt by the library and related communities to come to terms with human intermediation in today’s digital libraries.”

Electronic reference provides academic libraries with opportunities to expand reference services, utilize resources and staff innovatively, and engage in collaborative endeavors in ways never before possible.

Although e-mail and chat have not led to profound changes in reference service, they have, never the less, played a very important role in leading to the current testing of e-commerce software. The knowledge gained from doing e-mail reference, will provide libraries who have been offering this service with a firm foundation for moving to real-time reference. Even with this knowledge, the implementation and integration of real-time electronic reference into academic libraries in ways that meet the needs and expectations of our users pose significant challenges for all of us. The implementation of real-time electronic reference service in our libraries is not a matter of if but when. Software that can be adapted by libraries is already on the market and we can expect to see rapid enhancements by software manufacturers in the future.

What we see today are quickly changing and evolving opportunities to utilize e-commerce software for use in academic libraries. These opportunities are unlimited and offer academic libraries the ability to participate in the future of reference service now.

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Notes

2. Ibid., 10.
4. Bill Miller, “What’s Wrong with Reference: Coping with


11. Steve Coffman, "Thank You from the Bay Area Libraries Project," on DIG_REF@LISTSERV.SYR.EDU. Available at http://www.vrd.org/Dig_Ref/dig-ref-1 (09/18/00).


13. Ibid., 9.