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Evaluation of a Statewide Collaborative Chat-based Reference Service: Approaches and Directions

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The State Library of North Carolina recently launched an 18-month pilot of a collaborative statewide chat-based virtual reference service, for which the authors have been contracted as program evaluators. The primary evaluation question motivating this pilot program is: “Is collaborative virtual reference an effective way to meet the information needs of North Carolinians?” This paper describes the evaluation plan, the methodologies, and the data analyses that will be employed to answer the evaluation question. The paper also describes some preliminary findings from one of the libraries participating in the service and currently offering chat-based virtual reference service.

Introduction

The evaluation of library reference services has a long history, going back as far as reference services have been offered in libraries. Evaluation of reference services began in earnest in the 1960s–1970s, when tight budgetary situations required all services to justify their place in the library. The same situation applies today, with tight budgets requiring a close examination of all services offered in a library.

Some early work in the evaluation of library reference services included analyses of the cost of providing reference service. A number of

studies in the late 1960s and 1970s arrived at surprisingly high cost-per-transaction figures (Murfin, 1993). These high figures led to other evaluation measures than cost being sought by reference services seeking to justify their existence in the library. Two widely-used alternative measures are the quality of the service being provided, and the impact of the service on the user.

While these measures are popular, they are also difficult to operationalize. The well-known “55% Rule” is an example. Hermon & McClure (1986) operationalized the quality of the service as the accuracy of the answer provided (for quick fact and bibliographic questions only), and found that librarians answered reference questions correctly only 55% of the time. Utilizing a random sample of actual questions asked at reference desks, on the other hand, Saxton and Richardson (2002) found answer accuracy rates of over 90%. Others have suggested that the quality of the service encompasses other measures than accuracy alone. Durrance (1989), for example, suggests the user’s willingness to return to ask another question of the same librarian as an alternative measure.

Many of the measures proposed for evaluation of desk reference apply in the online environment as well. More recently, work has been done that specifically offers statistics, performance measures, and quality standards to assess virtual reference services (McClure et. al,

2002; VRD, 2003). In short, there is no lack of proposed approaches and measures to assess reference services in general and digital/chat-based reference in particular.

The Importance of Evaluation

Evaluation efforts are essential for reference services for a number of reasons. Perhaps most importantly, evaluation provides the library administration and the reference service itself with information about how well the service is meeting its intended goals, objectives, and outcomes; the degree to which the service is meeting user needs; and if resources being committed to the service are producing the desired results. In addition, evaluation data provide a basis for the reference service to report and communicate to the broader library, user, and political communities about the progress and success of the service. Such services cannot be improved if there is no knowledge of the existing problems or deficiencies of the service.

While evaluation data are necessary to assist decision makers in managing a reference service, they are not sufficient in and of themselves. All evaluation takes place in a political context in which different stakeholder groups (librarians, users, state and local government officials, funding sources, and so forth) have different and sometimes competing expectations of what a project should be doing and what the results should be. Despite the development and implementation of a variety of evaluation measures, different stakeholder groups may interpret evaluation data differently. The data that result from evaluation efforts provide baseline information that can inform decision makers as they discuss the activities and results of the service.

Overview of Chat-based Reference

The earliest virtual reference services were offered via email, as outgrowths of existing reference desk services in academic and special libraries (Kittle, 1985; Howard and Jankowski, 1986). These virtual reference services were developed largely to extend the hours of availability of the reference desk, by allowing asynchronous interactions between the user and the librarian. Many physical reference desks continue to offer email-based reference services. Almost as soon as the technology became available to create a webform, virtual reference services began utilizing webforms for question submission (Lankes, 1998; Lagace, 1999). Since that time, the percentage of questions submitted to asynchronous services *via* the web has far

outstripped the percentage submitted via email (Carter and Janes, 2000; Janes, Hill, and Rolfe, 2001).

A range of applications have been used to provide chat-based reference service, from instant messaging (IM) applications, such as AOL Instant Messenger, to applications designed specifically for chat-based reference. This latter category includes several applications: Tutor.com's (formerly LSSI's) Virtual Reference Toolkit (www.vrtoolkit.net), the eponymous 24/7 Reference (www.247ref.org), the Library of Congress and OCLC's QuestionPoint (www.questionpoint.org), and Docutek's VRLplus (www.docutek.com), to name only a few of the most widely used. These applications bear a resemblance to commercial help desk applications, and indeed, 24/7 Reference and the VR Toolkit are extensions built on top of eGain's call center software (www.egain.com). LivePerson (www.liveperson.com) is also fairly popular, and in fact is a commercial help desk application. All of these applications possess similar sets of functionalities, including instant messaging, graphical co-browsing, webpage- and document-pushing, customization of pre-scripted messages, storage of transcripts, and statistical reporting. For excellent comparisons of the features of these and other applications for chat-based reference, see Hirko (2002) and Ronan (2003, pp. 31-34).

In the mid-1990s a new type of reference service began to appear online; while the more "traditional" virtual reference services make use of asynchronous methods of communication, these newer reference services make use of synchronous methods of communication: chat environments (Francoeur, 2001), instant messaging (Foley, 2002), and graphical co-browsing (Patterson, 2001). Several consortia of chat-based reference services have been formed since the late 1990s. Some of these consortia are composed of libraries within a single state or geographic region, such as QandA-NJ, a service of the New Jersey Library Network (www.qandanj.org), KnowItNow, the Cleveland Ohio public library's CLEVNET Consortium (www.knowitnow24x7.net), and the Western New York Library Resources Council (www.wnylrc.org). Some of these consortia are composed of libraries using the same software application, including those discussed above.

Overview of the Evaluation

NCKnows is the name of a chat-based reference service that was launched in North

Carolina in February 2004 (www.ncknows.com). *NCKnows* is a collaborative state-wide service, and includes libraries of all types: academic, public, and government; in research universities and community colleges, urban and rural, large and small. This project is funded by a Library Services and Technology Act (LSTA) grant, and is being coordinated by the State Library of North Carolina's Library Development Section. As of this writing, *NCKnows* is 9 months into an 18-month pilot phase, during which time issues involved in such collaboration will be identified and management models and procedures for collaboration will be developed, training for librarians will be developed and offered, and evaluation approaches and metrics for the service will be developed and an evaluation performed. The *NCKnows* service will utilize the 24/7 Reference software tool set to provide chat-based reference service. The 24/7 Reference application was developed specifically for use in library reference, and allows all of the functionalities mentioned above: instant messaging, graphical co-browsing, webpage- and document-pushing, customization of pre-scripted messages, storage of transcripts, statistical reporting, and other functions.

This paper presents the plan for the evaluation effort of *NCKnows*, as well as some preliminary findings from this evaluation, which the authors are currently performing. The primary motivation behind the evaluation effort is to determine whether or not collaborative virtual reference is an effective way to meet the information needs of North Carolinians. A number of secondary evaluation questions also motivate the evaluation effort, including such questions as, what is the value of collaboration in a chat-based reference service, what is the impact on libraries that provide such a service, how will the project further greater use of existing resources, and how can the quality of the service provided be measured?

In order to answer the evaluation questions, the evaluation effort analyzes *NCKnows* from three perspectives: from the perspective of the individual libraries participating in *NCKnows*, from the perspective of the entire collaborative effort, and from the perspective of the library users. These perspectives are important to ensure a better understanding of the use and impact of the service.

The evaluation of *NCKnows* is both formative and summative in nature. Formative evaluation monitors activities and measures on an ongoing

basis and provides information that may be used to improve the object of evaluation while it is still ongoing. The evaluation of *NCKnows* has been ongoing during the 18-month pilot phase, so that early evaluation findings may be fed back into the service as it is currently implemented.

Summative evaluation takes place at the conclusion of a project, or at specific time periods during a project, and is intended to show the degree to which the project accomplished its goals and objectives and if the project accomplished the desired outcomes. Every six months and at the conclusion of the 18-month pilot phase, the evaluators will write reports answering as many of the evaluation questions as possible given the data available at that time. At the conclusion of the 18-month pilot, this summative evaluation also may become a formative evaluation, since, if the answer to the primary evaluation question is yes, collaborative virtual reference is an effective way to meet the information needs of North Carolinians, then *NCKnows* will be continued and the final evaluation report will hopefully be utilized to shape the ongoing service.

Perhaps the most important aspect of this evaluation is that the evaluators are able to develop the evaluation approach, methods, and measures before the actual implementation of the service. This strategy will help to insure a useful evaluation – one that can provide important information to decision makers as they develop and scale the project.

Current State of the Evaluation

The *NCKnows* service was launched on 16 February 2004 – approximately three months ago as of this writing. A total of 18 libraries are participating: eight public and nine academic libraries, and one medical library. (While the State Library of North Carolina is coordinating the *NCKnows* project, the State Library itself is not participating in the project.) Training materials developed by 24/7 Reference were customized for the *NCKnows* project, and this training was delivered at the end of January 2004. *NCKnows* was launched with limited marketing; a medium-sized marketing effort was undertaken for National Library Week, April 18-24, 2004. A larger marketing effort will be undertaken for the start of the school year for North Carolina public schools.

Because the *NCKnows* service was only recently launched, the collection of data on the service and its users has only just begun. Despite

the lack of marketing, *NCKnows* has received an average of 185.6 questions per week since it was launched. Each of the 18 participating libraries has a link on its website to the *NCKnows* service, thus allowing the tracking of traffic to the service by library. To date, fully 47% of *NCKnows* users have logged in via the Public Library of Charlotte and Mecklenberg County (PLCMC). This is no great surprise, since PLCMC has a longstanding base of virtual reference users, as will be discussed below. Preliminary analyses of data from exit surveys that pop up for users at the conclusion of each chat session indicate that, as might be expected with a new service, user satisfaction is extremely high along several satisfaction measures: the completeness of the answer (67% very satisfied), the speed with which the librarian answered the question (63% very quickly), and the helpfulness of the librarian (77% very helpful). Preliminary analyses also indicate that the largest user group is undergraduates, at 17% of users responding to the exit survey, followed closely by graduate students at 15%. There has also been an unexpectedly large number of librarians using the *NCKnows* service: most of these librarians are from libraries other than the 18 participating, and their questions concern the service itself. Perhaps these librarians are satisfying their own curiosity, or perhaps they are reporting back to their library's administration. In either case, it is clear that librarians are interested and enthusiastic about the potential of the *NCKnows* service.

Prior to the launching of the *NCKnows* service, there were eight libraries around the state of North Carolina that are known to have been offering chat-based reference service for some time. All of these libraries are participating in the *NCKnows* service. These libraries have been using a variety of applications for chat-based reference, including LSSI (www.lssi.com), QuestionPoint (www.questionpoint.org), and LivePeople (www.phplivesupport.com). Some of these libraries have continued to use these applications in addition to 24/7 (www.247ref.org) since the launch of *NCKnows*, and some have abandoned these other applications in favor of 24/7. Only one library, however, has been using 24/7 Reference all along for their chat-based reference service: the Public Library of Charlotte and Mecklenberg County (PLCMC, www.plcmc.org).

Preliminary Findings

PLCMC's chat service was launched in February 2002. As of this writing, there are

seven professional librarians at the PLCMC main branch in downtown Charlotte, NC who staff this service. The service is staffed by PLCMC librarians 2 hours per day, 5 days a week: 2-4 pm Monday-Friday. The intended primary user base for this service is residents of Charlotte; anyone can use the service, however, as there is no login or verification that one is a resident of Charlotte required. PLCMC's service is part of the 24/7 cooperative service, which is a distributed network of libraries using the 24/7 Reference software tool and a network of subject specialists, to which a library's questions will be sent during the hours that the library is not offering service. Questions will also be sent to the network if there is "overflow": more questions coming in than can be handled by the library at the time. (Since the launch of the *NCKnows* service, the PLCMC's service has also been covered by the other *NCKnows* libraries, though *NCKnows* is not yet part of the 24/7 cooperative.)

Data from PLCMC's chat-based reference service over the period of February 2002 to January 2004 have been analyzed, to provide a baseline for the evaluation of *NCKnows*. This time period was selected for analysis for two reasons: first, it spans precisely two years. Second, it allows for the analysis of the PLCMC's service by itself, without the need to disentangle the effect of the *NCKnows* service (launched in February 2004) on the PLCMC's service.

The evaluators will utilize many of the same measures in the evaluation of *NCKnows* as have been utilized in the evaluation of PLCMC's chat service. In time, the evaluators hope to analyze the other chat-based services in the other libraries that offered it prior to the launch of the *NCKnows* service, again using many of the same measures. The goal of the evaluations of these "pre-existing" chat services is to provide some retrospective analyses of these services, so that upon the conclusion of the *NCKnows* evaluation, longitudinal analyses of these services and their users will be possible, spanning pre- and post-implementation of *NCKnows*.

Both quantitative and qualitative analyses will be necessary to answer the evaluation questions in the *NCKnows* evaluation effort: quantitative analyses can provide data on such measures as the volume of chat transactions handled by PLCMC and the cost of each transaction, while qualitative analyses can provide data on such measures as user satisfaction, how the

information provided by the service helped users fulfill their information needs, and the impacts of the service on overall library services.

The PLCMC data, however, only allow quantitative analyses. In order to collect data for qualitative measures, it would be necessary to contact users individually to ask them such questions as their level of satisfaction with the service and how the information provided helped them. This is not possible, however, as no contact information was collected from the users at the time of their chat session with PLCMC. For the purposes of the *NKnows* evaluation effort, contact data is being collected from *NKnows* users and permission solicited to contact the users after the conclusion of the chat session, in order to ask questions such as these. Thus, only quantitative analyses are possible with the PLCMC data, by analyzing the data collected automatically by the 24/7 Reference software tool. For the *NKnows* evaluation effort, these same quantitative analyses will provide a partial answer to the evaluation questions, but in order to fully answer these questions, qualitative and quantitative analyses both will be necessary.

Duration of Service

The first notable finding is that the average length of chat sessions in PLCMC's service is 13.7 minutes, which is consistent with the length of 15 minutes reported by the International Federation of Library Associations and Institutions (2003) as being the length of the average session (Chat Guidelines section), and by McGlamery and McClennen (2003) as the goal for the length of a session. Even more interesting is the fact that the length per transaction appears to be settling on 15 minutes exactly, as can be seen in Figure 1.

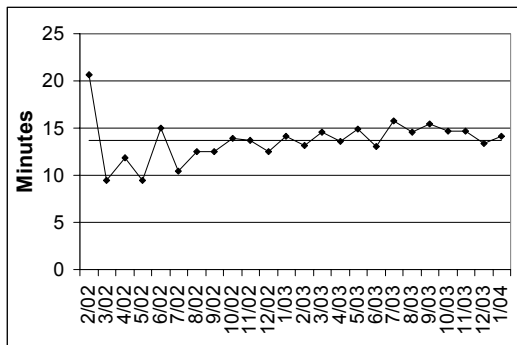


Figure 1: Average duration of chat sessions in minutes, by month

Volume of Transactions

The volume of chat transactions being handled by PLCMC has not increased every month; overall, however, the trend is to a steadily increasing volume of questions since the service was launched. This is consistent with trends seen in other chat reference services (Hoag and Cichanowicz, 2001; Stormont, 2001; Ronan and Turner, 2002; Belanger, Lankes, and Shostack, 2002; Hill, Madarash-Hill, and Bich, 2003). Figure 2 shows also that there is a rise and fall in volume of transactions roughly corresponding with the academic year: a rise in transactions during the Fall and Spring semesters, and a decrease during the summer and winter breaks.

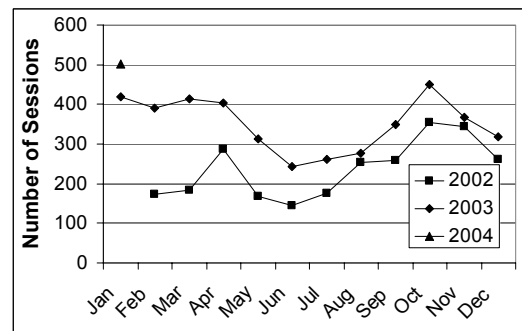


Figure 2: Number of chat sessions per month

The volume of chat transactions handled by PLCMC also shows a rise and fall over the course of a day, peaking in the early afternoon. Interestingly, the volume of questions in 2002 peaks between 1:00-5:00 PM, while in 2003 volume peaks over a wider span of time, between 2:00-8:00 PM. It is not clear why the peak time in 2003 was later in the day than in 2002, but the fact that this peak lasted longer in 2003 than in 2002 may be an indication of the popularity of the service. This is another indication of the rise in volume overall that is evident in Figure 2. (The one month's worth of data from 2004 was insufficient to provide a reasonable comparison with the full year's worth of data from 2002 and 2003, and so was not included in the analysis for Figure 3.)

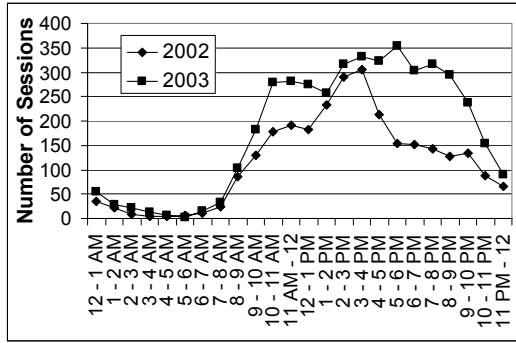


Figure 3: Number of chat sessions per hour

During the hours in which the service is offered at PLCMC, the PLCMC librarians handled 16%, and the rest of the 24/7 network handled 84% of the chat transactions received by the PLCMC chat service. During these hours, 86% of PLCMC's total traffic was from users in North Carolina (67% from users in the Charlotte area alone), and 8% was from users outside of North Carolina. It was not possible to determine the location of 6% of users. PLCMC made out well in this: for a comparatively minimal investment in supporting users outside of the PLCMC's target user community, the PLCMC chat service more than quadrupled the volume of transactions that they were able to handle during their hours of service. And this figure takes into consideration only the 2 hours per day, 5 days a week during which the PLCMC's service is staffed. Taking the full 24 hours per day into consideration, the PLCMC chat service has increased the volume of transactions that they were able to handle per day many times over.

One of the evaluation questions motivating this effort is: what is the value of collaboration in a chat-based reference service? Clearly, one component of the answer to this question is: a greatly increased number of hours that it is possible to offer the service, and a correspondingly great increase in the number of users it is therefore possible to serve.

Another of the evaluation questions motivating this effort is: what is the impact on libraries that provide chat-based reference service? There may be many impacts that affect a library offering such a service, both positive and negative. One impact is the amount of time required to plan for and to offer the service. As stated above, there is a rise and fall in the number of chat transactions over the course of a year, but the overall average since the launch of the PLCMC service is 306.3 sessions per month. If we calculate that 16% of these sessions are handled by PLCMC librarians,

then 49 sessions per month are handled by PLCMC librarians. At an average length of 13.6 minutes per session, PLCMC librarians therefore spend 666.4 minutes, or 11.1 hours per month offering chat-based reference service. Divided by the seven librarians who staff the service, this is 1.6 hours per month per librarian. This is a considerable amount of time expended on this service. The authors do not have access to the salary figures for the librarians offering this service, but with this and additional information one could, as McClure et. al. (2002, pp. 53-55) suggest, calculate the cost of offering virtual reference service, the cost of virtual reference service as a percentage of total reference budget, and the cost per transaction of this service.

Use of Existing Resources

The resolution of a transaction at a reference desk is frequently that the librarian provides the user with a print publication from the library's collection. This is possible due to the fact that the librarian and user are both physically present, and the librarian can lead the user into the stacks and hand the user a book or other resource. This is of course not the case in chat-based reference services. In chat-based (as well as any other form of computer-mediated) reference services, the librarian and the user are physically separate. It is therefore impossible for the librarian to hand an information source to the user, and it may even be impossible for the user to visit the library (or any library) to use a recommended source at a later time. Indeed, the only common ground between the librarian and the user that can be known for certain is that they both have a connection to the Internet. Thus it makes far more sense for the resolution of a chat-based (or otherwise computer-mediated) reference transaction to be that the librarian provides the user with an online resource containing the appropriate information.

This is borne out by the types of resources that are provided to the users of the PLCMC's chat service. Out of the 7,205 chat transactions since the launch of the service, in 1,306 (18.1%) the librarian recommended a specific book to the user (though an average of 2.1 titles was recommended per transaction when a book was recommended). On the other hand, in 4,098 transactions the librarian recommended an online resource (an average of 4.9 resources recommended per transaction). In 2.4% of these 4,098 transactions the librarian recommended a fee-based resource to which PLCMC subscribes, 6.3% were referrals to the page on PLCMC's

website listing these fee-based resources, 3.6% were referrals to PLCMC's OPAC, and the remaining approximately 88% were sources on the free web.

Another of the evaluation questions motivating this effort is: how will the project further increase use of existing resources? Clearly the librarians providing chat service can make better use of the existing resources held by PLCMC, both print and electronic.

Repeat Users

As discussed above, Durrance's (1989) criterion for measuring the quality of the reference service provided is the user's willingness to return to ask another question of the same librarian. In a virtual reference service the user may have no control over which *specific* librarian he or she asks a question of. We therefore suggest that an alternative to Durrance's criterion for virtual reference service is the user's willingness to submit another question to the same *service*.

Of the users of the PLCMC's chat-based reference service, 76% were first-time users, but a considerable 24% were repeat users. This is consistent with 28% repeat users, as reported by Greene and Thompson (2003). Table 1 shows the frequency with which repeat users used PLCMC's service.

Table 1. Frequency of repeat usage

Number of previous uses	1	2	3	4	5	6+
Percentage of users	76%	14%	4%	2%	1%	3%

What Table 1 does not show, however, is that there are users who have used the PLCMC's chat service as many as 50 and 60 times. Given that there are at least several hundred chat-based reference services in the United States alone (a precise count has never been made, but see www.public.iastate.edu/~CYBERSTACKS/LiveRef.htm), the fact that these users have returned to the service so many times may be taken as one indication of quality service having been provided and the users' satisfaction with that service.

Future Directions

As discussed above, quantitative analyses such as the ones presented above will provide only preliminary answers to the evaluation questions in the *NCKnows* evaluation effort. In order to

fully answer these questions, both qualitative and quantitative analyses will be necessary. This section will discuss some of the qualitative analyses that the evaluators have planned and as of this writing are beginning to implement for the *NCKnows* evaluation effort.

As mentioned above, exit surveys have been implemented to pop up for users at the conclusion of each chat session. These surveys include questions eliciting several satisfaction metrics: the user's satisfaction with the completeness of the answer provided, the speed with which the librarian answered the question, the helpfulness of the librarian, the ease of use of the chat software, and whether the user would recommend the service to a friend. These exit surveys have, since the launch of the *NCKnows* service, had low response rate. This is, however, a hazard of self-administered surveys; after a 13.7 minute chat session, users may be disinclined to spend even another minute or two filling out a survey. As the evaluation effort continues, the problem of how to motivate a greater percentage of users to fill out the exit surveys will be addressed.

One of the most important analyses that will be performed of the chat sessions from the *NCKnows* service will be a content analysis of the chat session transcripts. The transcripts will be analyzed to identify such elements of the chat session as: whether the information source or sources provided by the librarian contained a complete and accurate answer to the user's question (the 55% Rule criterion), and whether the user made any comment during the session to the effect that the information provided was useful or that he or she was satisfied with the service provided.

This analysis of chat session transcripts will be conducted both by the evaluators and by other librarians from the 18 libraries participating in the *NCKnows* service. The evaluators will utilize a methodology similar to that presented by Radford (2003) in the analysis of chat transcripts for the Samuel Swett Green Award (www.vrtoolkit.net/greenaward.htm), to identify exemplary virtual reference transactions. This methodology is based on conversation analysis performed on face-to-face interactions (ten Have), and involves identifying such elements of the interaction as: factors that facilitate or hinder the relationship between the librarian and the user, use of language by both participants, and negotiation of conversational opening and closing sequences.

This type of analysis of *NCKnows* chat transcripts will be combined with analyses performed by the librarians themselves. The librarians' analysis will be concerned with the completeness and accuracy of the answer provided, the appropriateness of the resources provided by the librarian in the chat session, and the extent to which the librarian adhered to guidelines for best practices in providing reference service, such as those provided by the American Library Association (ALA, www.ala.org/ala/rusa/rusaprotools/referenceguide/guidelinesbehavioral.htm) and the International Federation of Library Associations and Institutions (IFLA, www.ifla.org/VII/s36/pubs/drg03.htm).

By combining the evaluators' and the librarians' analyses, a full picture will emerge of the quality of the reference service provided. Based on these analyses, the evaluators will be able to make recommendations for how to improve the quality of the reference service: how to increase the accuracy, completeness, and usefulness of the answers provided, as well how to improve the interaction between the user and the librarian.

Interviews will also be conducted with librarians in the 18 libraries participating in the *NCKnows* service. These interviews will elicit data concerning anticipated future requirements of the *NCKnows* service: what training the librarians wish they had received on the use of the chat software and in providing chat reference service, and what procedures and policies the librarians foresee as becoming necessary for the successful continuation of the *NCKnows* service.

Examples of other methods that will be used in the *NCKnows* evaluation are as follows:

- Interviews will be conducted with *NCKnows* users, after obtaining permission to contact them, approximately two weeks following the chat session. These interviews will elicit the user's information need that motivated their use of the *NCKnows* service, as well as the usefulness of the information provided, after the user has had a chance to use it.
- Librarians in partner libraries will fill out exit surveys upon the completion of chat transactions. These exit surveys will collect transaction-level data such as the subject of the question and the difficulty of the question, as perceived by the librarian.
- Content analysis will be performed on questions and answers. This analysis will

enable the determination of the types of questions received by the *NCKnows* service, and the resources utilized in providing answers, as well as whether there are patterns to the types of resources utilized to answer specific types of questions.

- Web server logs and data collected automatically by the 24/7 Reference software tool will be collected and analyzed. This data will allow quantitative analyses including: usage of the service by unit of time, users' point of entry to the service, and the number and percentage of use of the service by patrons of participating libraries.

These approaches will be fine-tuned as the evaluators implement the evaluation effort. Ultimately the evaluation methods, once validated, will be of use for other virtual reference services.

One of the goals of the evaluation effort is, if at the conclusion of the 18-month evaluation effort the answer to the primary evaluation question is yes (that collaborative virtual reference is an effective way to meet the information needs of North Carolinians), to present data that will provide incentive for additional libraries to participate in *NCKnows* – indeed, in time perhaps all libraries in North Carolina.

Ultimately, the future directions for *NCKnows* will depend on not only the evaluation findings, but factors related to resource availability, perceived usefulness of the service by local and state political forces, and the ease with which the project can be scaled statewide. Decisions concerning those future directions can be more easily made with the evaluation data that will be generated as a result of this evaluation effort.

Statewide and collaborative chat reference services are becoming increasingly common. Much of the existing research on chat reference services discusses recently launched and pilot services; this body of literature essentially amounts to a series of case studies. A number of books have been published recently that discuss emerging standards and best practices in providing chat-based reference (Coffman, 2003; Ronan, 2003; Hirko and Ross, 2004). It is time for the creation and discussion of theoretical frameworks to unite these standards and practices. It is the evaluators' hope that this evaluation effort, and evaluations of other collaborative chat reference services, will push

forward the development of such theoretical frameworks.

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