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Seeking Synchronicity: Evaluating Virtual Reference Services from User, Non- User, and Librarian Perspectives

A proposal submitted to the National Leadership Grants for Libraries program of the Institute of Museum and Library Services (IMLS).

Abstract

This document proposes a project to study and evaluate the sustainability and relevance of virtual reference services, which are human-mediated, Internet-based library information services. The goal is to study VRS users, non-users, and librarians to create a fuller understanding of their behaviors, needs, and preferences in virtual environments, in order to improve libraries' ability to respond to increased demand on libraries to provide reference services online. The project will develop a theoretical model for VRS that incorporates interpersonal and content issues and will make research-based recommendations for library staff to increase user satisfaction and attract nonusers. It will also make recommendations for VRS software development and interface design and produce a research agenda for user-centered VRS.

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Narrative

1. Assessment of Need

Since 1999, Web-based library reference services have emerged as vital alternatives to the traditional face-to-face (FtF) or telephone reference encounter. Synchronous, (i.e., chat reference or Ask a Librarian services) and asynchronous (i.e., email) virtual reference services (VRS) have grown in number and become common features of both public and academic library home pages (Johnson, 2004). Chat services enable users to interact with librarians in real time via a Web interface, similar to Instant Messaging (IM). Chat software usually includes enhancements that allow the librarian to push Web pages or co-browse electronic resources with users and to choose prepared scripts to save time. Chat users can access the service from any location with an Internet connection, usually, but not always, remote from the physical library.

Seed money from granting institutions including many IMLS/LSTA awards has supported the development and the initial one to three years of fledgling VRS, but for many of these services, grant support is running out and sustainability is a critical issue in these times of extremely tight budgets. Competition from commercial, fee-based Web reference services (like *Google Answers*) has recently emerged (Coffman & Arret, 2004a). Within the library literature there is controversy as to whether VRS are viable in terms of cost and benefits (Coffman & Arret 2004a, 2004b; Tenopir, 2004a, 2004b). Recently one author has asserted that virtual reference at the statewide level is successful and growing steadily with considerable cost sharing benefits (Bailey-Hainer, 2005).

Beyond sporadic, usually quantitative data, little is known about the users of VRS, how they determine service excellence and rate satisfaction, how and why they choose to use VRS, and what their use patterns are. Also, little is known about the librarians who staff these services, their satisfaction with their performance, and how they determine success and satisfaction. Even less, indeed a negligible amount, is known about non-users of these services and the reasons they do not choose VRS. This international study seeks to investigate factors that influence the selection and use of synchronous, chat VRS, and user and staff perceptions of satisfaction. It also seeks to develop research-based recommendations for VRS staff to increase satisfaction. It involves a combination of data collection techniques (transcript analysis, focus group interviews, online surveys, and individual interviews) and quantitative as well as qualitative methodologies of data analysis.

Current Research Context

Since the introduction of the Web in 1993, access to electronic information through library Web pages has proliferated, and increasing numbers of libraries have now added digital reference assistance for remote users to their list of services. Information seekers are increasingly turning to VRS for the anonymity and convenience of remote access (Tenopir, 2004b), and for the extended hours of operation (Ruppel & Fagan, 2002). Although the proliferation of these new methods for service delivery highlights the need for research focused on understanding users and staff behavior and impact on issues of satisfaction and success, their assessment poses new challenges for researchers. Research in VRS evaluation is in its early stages with most studies addressing questions of accuracy and efficiency. Studies of digital reference thus far “have been mostly descriptive, focusing on individual services and their constituents” (Kasowitz, Bennett, & Lankes, 2000, p. 355). Relational aspects have been shown to be critical to clients’ perceptions of successful FtF reference interactions (Radford, 1993, 1999; Dewdney & Ross, 1994). However, additional research is needed to discover whether these findings can generalize to the virtual reference environment and to provide an empirical basis for developing guidelines for providing service excellence. Several authors have called for increased attention to this area (see, for

Radford & Connaway: Seeking Synchronicity: Evaluating Virtual Reference Services from User, Non-User, and Librarian Perspectives. (A research proposal; see cover page for full citation.)

example, Kasowitz, Bennett & Lankes, 2000; McClure & Lankes, 2001; Nilsen, 2004; Novotny, 2001; Ronan, 2003; Whitlatch, 2001). Ruppel and Fagan (2002) note that there is a lack of qualitative study and recommend that there be an analysis of chat reference conversations.

Chat reference encounters provide an interesting and unique context for study. Unlike FtF interactions in which library users may choose to seek out familiar librarians with whom they have established an ongoing relationship (see Radford, 1998), chat reference makes it possible to return to the same service time and time again, but there is only a small chance that a user will interact (or will be able to discern that they are interacting) with the same librarian again. VR (virtual reference) encounters do, however, produce an artifact, a complete transcript of the session that captures the dialogue and, in some systems, time stamps each response. These transcripts allow researchers to perform content analyses that are difficult and obtrusive in FtF encounters.

There is a large body of Library and Information Science (LIS) research that studies the content (task) aspects of FtF reference encounters (for example, see overview in Baker & Lancaster, 1991). There is a smaller, but growing number of studies in interpersonal dimensions of FtF reference encounters in a variety of library contexts (see, for example: Chelton, 1997, 1999; Dewdney & Ross, 1994; Radford, 1993, 1998, 1999; Ross & Dewdney, 1998).

Literature on VRS is rapidly proliferating, but many services are only just beginning to conduct studies of user behavior (Sloan, 2004). Evaluations of efficiency and effectiveness in task dimensions such as correctly answering the questions posed are appearing in the literature in increasing numbers (e.g., see Carter & Janes, 2002; Foley, 2002; Gross & McClure, 2001a, 2001b; Kaske & Arnold, 2002; White, Abels, & Kaske, 2003). However, few research studies have appeared that compare user and librarian satisfaction with VRS or that investigate relational dimensions of virtual reference. Exceptions that do investigate user perceptions and interpersonal dimensions include studies by Carter and Janes (2002), Janes and Mon (2004), Radford (2003), Radford and Thompson (2004a, 2004b), Ruppel and Fagan (2002), and Nilsen (2004).

Carter and Janes (2002) analyzed over 3,000 email transcripts from the Internet Public Library (IPL) (<http://www.ipl.org>). They found that unsolicited “thank you” messages were received for 19.7% of the interactions. Janes and Mon (2004) performed a follow-up study of 810 IPL email reference transcripts and found a 15.9% “thank you” rate. These researchers argue that this rate is an indicator of quality service from the user’s point of view. Ruppel and Fagan (2002) compared user perceptions of VRS and the traditional reference desk in a study of the use of an Instant Messaging (IM) chat reference service. They concluded: “New library services generally succeed when the ‘best’ aspects of traditional services are incorporated. Transferring effective reference behaviors from the traditional desk environment to the IM service is challenging, given the absence of facial expressions and body language” (Ruppel & Fagan, 2002, p. 9).

Nilsen (2004) reported on forty-two Master of Library Science (MLS) students’ perceptions of VRS encounters. Results indicated that relational factors are critically important to the clients. Radford (2003) conducted a pilot study of forty-four chat transcripts that analyzed the quality of the interpersonal aspects of chat. Radford found that a wide range of interpersonal skills important to FtF reference success is present (although modified) in chat environments. A category scheme delineating positive behaviors that facilitate open communication, as well as negative behaviors that pose barriers was completed. Radford and Thompson (2004a, 2004b) built upon the Radford (2003) pilot study and analyzed 245 randomly selected chat transcripts from a statewide chat reference service (Maryland AskUsNow!). Results confirmed pilot study findings and expanded the breadth of the category scheme of positive and negative behaviors. In addition, behaviors of rude and/or impatient users were identified and discussed. See Appendix A.

The present study proposes to extend the work described above and to conduct the first evaluation of transcripts randomly selected from an international VRS provider (OCLC Online

Radford & Connaway: Seeking Synchronicity: Evaluating Virtual Reference Services from User, Non-User, and Librarian Perspectives. (A research proposal; see cover page for full citation.)

Computer Library Center's QuestionPoint). QuestionPoint is a VRS supported by a global network. It has been developed by OCLC and the Library of Congress and has recently merged with 24/7 Reference developed by the Metropolitan Cooperative Library System in Southern California. QuestionPoint is used in more than 1,000 libraries in twenty countries; 24/7 serves approximately 500 libraries (<http://www.oclc.org/questionpoint>). With their merger, the majority of libraries offering VRS will participate in the QuestionPoint network. The proposed study will draw its participants from the QuestionPoint network of librarians and users, and will be one of the first international investigations of user, non-user, and librarian perceptions of VRS, combining both academic and nonacademic populations.

Research Questions

This study addresses the following research questions that are derived from the gaps uncovered in the review of the literature.

- What are the critical factors that influence users' decisions to select and use VRS? Why do non-users opt to use other means?
- What are the critical factors that determine users' perceptions of success and satisfaction in VRS?
- What is the relationship between information delivered/received (task/content) and interpersonal (relational) dimensions of VRS in determining perceptions of satisfaction/success?
- How do users and librarians differ in their perception of factors critical to their perceptions of success and satisfaction?
- What is the impact of the use of prepared scripted messages on satisfaction/success (e.g., "Welcome to our service, a librarian will be with you in a few minutes.")? Do impersonal scripted messages impact user behavior (e.g., promote rude behavior)?
- How does users' satisfaction with face-to-face reference encounters compare to satisfaction with reference encounters in virtual environments (including chat and email)?
- How do users express satisfaction? Do overt "thank you" messages equal satisfaction/success?

Intended Audience

The audience for this research is the global LIS community, since approximately one-fourth of the 1,500 libraries participating in QuestionPoint are non-U.S., including Canada, the United Kingdom, Australia, the Netherlands, and China. The results of this research will be of special interest to administrators and library practitioners who are contemplating the creation of VRS or who are already involved in VRS and are seeking to improve service and increase outreach to remote users and local users. If funded, this study will provide valuable quantitative and qualitative data to inform training of VRS staff, marketing of services, and improving systems design as well as librarian skills to better meet user needs. In addition, another audience will be the LIS research community whose work will be informed by these findings and guided by the research agenda for VRS that will be one of the project's products.

2. National Impact and Intended Results

National Impact

This project will innovatively address current issues concerning the evaluation, sustainability, and, ultimately, the relevance of VRS for libraries. Currently digital, as well as physical libraries, are facing a critical juncture and an uncertain future because of tight budgets,

Radford & Connaway: Seeking Synchronicity: Evaluating Virtual Reference Services from User, Non-User, and Librarian Perspectives. (A research proposal; see cover page for full citation.)

increasing competition from online bookstores and internet search engines such as Google, and decreasing numbers of FtF reference questions (Coffman & Arret, 2004a).

This international project seeks to address these issues through a variety of methods including transcript analysis and focus groups, surveys, and interviews with users, non-users, and librarians to identify ways to increase visibility and use of VRS and to improve service. It is believed that improving these services and making them more attractive to the public will result in increased use and increased recognition that VRS fills an important niche that is not served by other, more traditional library services (see Tenopir, 2004b). This recognition and increased use could result in ongoing and increasing budget allocations with the lasting impact being seen in the proliferation of satisfied users and growth not only in the number of VRS available, but also in service success. Results could have major impact on the next round of funding since many services that started with seed money of one to three year grants from IMLS/LSTA will be at the end of these funding cycles.

Significance of Results

The significance of the results will be determined by the participants' feedback; by the acceptance, presentation, and discussion of the research findings at national conferences; and by the acceptance of research papers by juried scholarly LIS journals. The research projects and papers that cite findings and build upon this work and the changes made to VRS and VR systems based on the results of the study will be the definitive demonstration of the significance of this project.

Generalizability and Usefulness of Results

The methodology has been designed to ensure that results will be generalizable through large random sample sizes and through the use of multiple methods of data collection and triangulation of results. Babbie (1992) recommends the triangulation of results "as a valuable research strategy" because each method has particular strengths and weaknesses, so use of multiple methods can avoid the "danger that research findings will reflect, at least in part, the method of inquiry" (p. 109). This study's methods include quantitative and qualitative analysis of 1,000 chat transcripts, 600 online surveys, 300 telephone interviews, and six focus group interviews with approximately seventy-two participants. For the transcript analysis, over a period of twenty months, a random sample of 1,000 transcripts will be drawn from a collection of approximately 250,000 transcripts from more than 1,000 participating libraries across the world. The feedback by VRS practitioners and administrators to the Radford (2003) and Radford and Thompson (2004a, 2004b) research presentations, category scheme, and guidelines/recommendations has been extremely favorable. These are preliminary indications that this research will be immediately relevant and useful to the LIS community. In addition, as each of the proposed research phases are concluded, results will be disseminated, thus enabling immediate impact. See recommendations in Appendix B and support letters in Appendix C.

Intended Results

The proposed research has the following intended results:

- To address the research questions detailed above.
- To identify research-based practices for attracting additional users to VRS.
- To understand what users want from VRS in order to develop more effective services that meet the users' information needs and ensure their satisfaction.
- To collect information from individuals from diverse cohort groups who are infrequently sampled in LIS research (including non-users, international users, etc.).
- To provide research-based guidelines to inform VRS practice and policy.

Radford & Connaway: Seeking Synchronicity: Evaluating Virtual Reference Services from User, Non-User, and Librarian Perspectives. (A research proposal; see cover page for full citation.)

- To refine Radford's recommendations for improving interpersonal communication in VRS for both librarians and users.
- To identify factors critical to successful VRS interactions and to develop guidelines and recommendations for evaluation of VRS.
- To provide a snapshot of VRS and users in a time of rapid change and ongoing development.
- To inform software development and interface design.
- To develop a research agenda and to serve as a foundation for future research projects in user-centered VRS.
- To develop a theoretical model for VRS that incorporates interpersonal (relational) aspects as well as information (content) aspects.
- To provide opportunities to develop research skills and research agendas for masters and doctoral students.

3. Project Design and Evaluation Plan

Project Design

The project will address the above research questions listed in Section 1. It will be divided into four phases: Phase I, focus group interviews; Phase II, transcript analysis; Phase III, online survey; and Phase IV, individual interviews. See the attached Schedule of Completion for a timeline of these phases. For data analysis across all four phases, NVivo qualitative software (<http://www.qsrinternational.com/>) will be used. Throughout all phases, all identifying characteristics will be stripped, thus assuring confidentiality and anonymity for participants.

Approximately 1,500 libraries providing VRS use OCLC's QuestionPoint to answer approximately 150,000 questions per year; therefore, with the merger of these two services, a large population is available from which to acquire a sufficient sample of librarians and users of VRS for focus group interviews, online surveys, and individual interviews, as well as transcripts for analysis.

Phase I – Focus Group Interviews

Focus group interviews have been used extensively in social science research (Krueger & Casey, 2000) and in library and information science research and practice (Powell & Connaway, 2004; Connaway, 1996). Although focus group interview data cannot be generalized to an entire population, the methodology is frequently used for identifying perceptions and attitudes of a target population (Powell & Connaway, 2004), which is the purpose of the focus group interviews in this study. Approximately six focus group interviews, with approximately twelve participants each, will be conducted with a sample of VRS users, non-users, and librarians. There will be two focus group interview sessions with each of these three cohort groups.

Recruiting Users and Non-Users

Users and non-users will be recruited through OCLC's QuestionPoint, Maryland AskUsNow! and at two colleges. Libraries using QuestionPoint services provide an online survey at the conclusion of each VRS session. See Appendix D for a list of survey questions. An additional question will be added to the survey, asking the individual if they would be interested in participating in a focus group and/or in a survey.

For logistical and budgetary reasons, locations have been selected for conducting focus groups of users and non-users in Maryland, at Charleston College, and at Rutgers University. Charleston College is interested in expanding their VRS and Rutgers University libraries have

Radford & Connaway: Seeking Synchronicity: Evaluating Virtual Reference Services from User, Non-User, and Librarian Perspectives. (A research proposal; see cover page for full citation.)

discontinued their chat VRS while continuing to offer an email reference service. These two academic institutions will provide a substantial pool of non-users.

In addition, the State Library of Maryland conducts a telephone survey each fall to identify both users and non-users of public libraries in Maryland. Several questions will be included in the interview to identify both users and non-users of VRS and to request participation in the focus groups or in the surveys. A strong research relationship already exists between the Maryland AskUsNow! statewide chat service and co-principal investigator Radford (see Radford & Thompson, 2004a, 2004b).

Recruiting Librarians

The librarians who provide VRS through QuestionPoint will be solicited from the attendees at the Virtual Reference Desk (VRD) annual conference in San Francisco, CA in 2005 and ALA Midwinter in San Antonio, TX in 2006. Focus groups with librarians will be conducted at both these locations. The VRD attendee list and the digital reference listserv (dig_ref) will be used to identify possible librarian participants for the focus group interviews. The data collected from all the focus group interviews will be used for the development of the online survey questions for Phase III of the study.

Phase II – Transcript Analysis

During Phase II, fifty VR (chat) transcripts per month will be randomly selected from OCLC's QuestionPoint service for a period of twenty months, resulting in a total sample of 1,000 transcripts out of a population of approximately 250,000. These transcripts will be stripped of all identifying information (e.g., name, email address, IP address, location) and will undergo three types of analysis. First, Katz's (1997, modified by Kaske & Arnold, 2002) decision tree and classification scheme for VR questions will be used to identify the type of query (e.g., directional, specific search, ready reference, research, policy and procedural level, holdings/do you own?) See Appendix E for the Katz/Kaske and Arnold classification scheme. Next, the questions will be classified by subject, using broad subject areas based on the *Dewey Decimal Classification System*. Finally, the transcripts will be coded using Radford's classification scheme to identify type and frequency of interpersonal communication. See Appendix A for the Radford classification scheme. In-depth qualitative analysis will involve repeated reading, identification, comparison, and categorization of issues, patterns, and themes following the constant comparative method (see also Kaske & Arnold, 2002). The category scheme and coding method was developed in a manner similar to that used in a previous study involving large quantities of qualitative data (see Radford, 1993, 1999), and was applied to chat reference in two prior research projects (Radford 2003; Radford & Thompson, 2004b). The theoretical framework of Watzlawick, Beavin, and Jackson (1967) underlies the development of the categories. It focuses attention upon the content (task) versus the relational (interpersonal) aspects of communication. It is expected that the classification scheme for interpersonal aspects of chat reference that was developed by Radford (2003) and further refined in Radford and Thompson's (2004b) analysis of 245 randomly selected transcripts from the statewide service Maryland AskUsNow! will be further expanded and refined during the transcript analysis.

Phase III – Online Survey

Online surveys will be developed from the results of Phases I and II. Six hundred participants will be recruited for Phase III. The goal will be to oversample to have 200 usable surveys from each of the three cohorts. The sample will be selected from the same populations as the focus group interviews: users and non-users of VRS will be recruited through the QuestionPoint surveys, Maryland AskUsNow! telephone interviews, and from Charleston

Radford & Connaway: Seeking Synchronicity: Evaluating Virtual Reference Services from User, Non-User, and Librarian Perspectives. (A research proposal; see cover page for full citation.)

College and Rutgers University. The librarians will be randomly selected from those who provide VRS through QuestionPoint.

The online survey for users of VRS will include questions to identify how they decide to select VRS and how, why, and when they use VRS. The online survey questions for non-users of VRS, who may or may not be library users, will be developed to determine how they are meeting their reference needs and why they do not use VRS. The online survey questions for librarians will ask them to identify the critical factors they use to determine success and user satisfaction with the service, using the critical incident technique (CIT). The CIT (Flanagan, 1954) has been used extensively for business and marketing applications, and in the study of library users (Radford, 1999, 1996). Gathering of critical incidents will allow analysis to center on identification of: the strengths and weaknesses of VRS; impact on those served; and the components that have the most impact on determinations of success/satisfaction. Qualitative methods, like the CIT, help to measure the differences that may fall between points on a standard scale. They can answer such questions as: “What do programs mean to participants? What is the quality of their experience?” according to Patton (1987, p. 30). They capture nuances of quality that are lost in most survey data collection techniques. The CIT approach allows for “the emergence, rather than the imposition, of an evaluation schema, and focus on the events and dimensions of the experience which are most salient, memorable, and most likely to be retold to others” (Ruben, 1993, p. 3).

Phase IV – Individual Interviews

Individual interviews will be the culminating and final phase of the study. The schedule of interview questions will be developed from the results of Phases I, II, and III. Interviews usually produce a better response rate than mail or email questionnaires and provide the opportunity to probe and to correct misunderstandings, as well as reveal more complex information (Powell & Connaway, 2004). The individual interviews will build on and supplement the online survey data collected. A sample of 300 people (100 from each of the three cohort groups who completed the online survey) will be interviewed. There is a possibility of conducting fewer interviews for each group if the qualitative categories become saturated and no new findings are expected.

The interviews will provide in-depth, descriptive data on how and why VR is or is not used. The interviewers will probe critical factors to determine how VRS users determine success, including the relationship between interpersonal communication and the content or answer received. The participants will also be asked to compare and contrast their experiences with different reference formats, including FtF, chat, and email reference.

Evaluation Plan

- The specific products planned as outcomes for this project include:
1. Final reports from the four research phases: I) focus group interviews; II) chat transcript analysis; III) online surveys, and IV) individual structured, telephone interviews.
 2. A series of six papers, each designed to serve both as national conference papers and as journal article submissions. See Dissemination section.
 3. Refinement of recommendations/guidelines for VRS practice that will be made available to VRS providers and system designers for more effective VRS.
 4. A theoretical model of VRS and a research agenda for user-centered inquiry in VRS.

Ultimately, the evaluation of the project will be measured by the extent to which researchers and practitioners in LIS use the results. Evidence that demonstrates how VRS

Radford & Connaway: Seeking Synchronicity: Evaluating Virtual Reference Services from User, Non-User, and Librarian Perspectives. (A research proposal; see cover page for full citation.)

providers and practitioners are using results for training, evaluation, and system design will be identified and documented.

4. Project Resources: Budget, Personnel, and Management Plan

a. Budget

The estimated cost for the project is \$1,105,642.00 of which the applicant is requesting \$716,478.00 (65%) from IMLS. The research will investigate what the users want from VRS and what has critical impact on their satisfaction. The type of qualitative, in-depth work proposed is costly both in terms of personnel needed to collect and analyze the data and funds needed to solicit and meet with participants for the study. Although this type of research involves higher costs than traditional survey research, the multiple methods utilized will provide information and insights that cannot be collected through questionnaires alone.

Much of the intellectual guidance and the technical support for the project come from matching contributions from OCLC Research and Rutgers University. OCLC Research is contributing \$192,225.00 and Rutgers is contributing \$196,939.00 to this project. The budget request to IMLS focuses on hiring operational labor (see personnel below) and paying respondents for their time. Some specific aspects of the budget that deserve particular mention are: a) the request for travel funds to assure at least two conference presentations a year and to conduct focus group and individual interviews; b) the purchase of a qualitative software package (NVivo) for data analysis, and training and travel to training; c) the purchase of two desktop computer workstations – one for the project manager and a computer workstation for one of the principle investigators for data analysis, and one laptop computer for personnel hired specifically for this project for off-site focus group interviews; and d) relying as much as possible on graduate student research assistants because of the cost effectiveness and learning opportunities these positions provide, both salary and hourly wages for three assistants.

b. Personnel

The proposed project involves a collaboration between researchers at Rutgers, the State University of New Jersey, School of Communication, Information, and Library Studies (SCILS) and OCLC's Office of Research. Collectively, the researchers have expertise in the following: a) interpersonal and computer-mediated communication, user studies, human information seeking behavior, information needs assessment, interdisciplinary research, qualitative and quantitative research methods, qualitative assessment of library programs and services, library and higher education administration and management, and information system design; b) research methodologies of: user-oriented inquiry, survey research, in-depth interviewing, reference service (traditional and VRS) evaluation, and focus group interviewing; and c) experience managing large, multi-year, interdisciplinary grant-funded projects. The project team will hire one full-time project manager, preferably a post-doctoral student in the field of LIS or communication recruited from SCILS. The team will include two doctoral student research assistants and one MLS student graduate assistant, also recruited from SCILS, and one master's student research assistant hired to work in the OCLC Office of Research to complement the strengths of the project manager. Research assistants will be recruited from qualified Rutgers students seeking research experience.

Also, a group of Rutgers University faculty and OCLC QuestionPoint personnel with expertise in digital environments, library evaluation, communication, and services to specific user populations will serve as an expert advisory board for the project. These experts have been selected for their proficiency in research methodologies and ability to contribute to the project goals. This group includes Mark Aakhus, Nicholas Belkin, Paul Kantor, Carol Kuhlthau, and Ross Todd from Rutgers University, and Paula Rumbaugh and Susan McGlamery from OCLC

Radford & Connaway: Seeking Synchronicity: Evaluating Virtual Reference Services from User, Non-User, and Librarian Perspectives. (A research proposal; see cover page for full citation.)

QuestionPoint. This internal board will actively serve in an advisory capacity throughout the project providing intellectual guidance to the co-investigators as needed. A weekly 2 hour team meeting will be held, bringing in members of the advisory board on a regular basis. They will review research procedures, documentation, instruments, interpretation of results, and dissemination strategies. They will provide administrative advice, alternative perspectives, and suggest additional ways to increase the impact of the project's results and dissemination of ideas. In addition, it is expected that they will perform additional research analysis with the large data sets that will be generated.

Paula Rumbaugh and Susan McGlamery project managers of QuestionPoint and 24/7 will also serve on the local advisory board for the project. Each will contribute approximately 5% of their time to the project, which is equivalent to 2 hours per week for twenty-four months. They were selected to participate in the project because of their knowledge and expertise with the QuestionPoint and 24/7 systems, questions, and participating libraries. They will assist with securing and analyzing the transactions.

The proposed co-principal investigators are Marie L. Radford and Lynn Silipigni Connaway, whose qualifications are briefly summarized below.

1) **Marie L. Radford, Ph.D.**, is an Associate Professor at Rutgers School of Communication, Information, and Library Studies. Previously she was Acting Dean and Associate Professor of Pratt Institute's School of Information and Library Science. She holds a Ph.D. from Rutgers and an MSLS from Syracuse University. Before arriving at Pratt in 1996, she was Head of Curriculum Materials at William Paterson University, N.J., and a school librarian in Hunterdon County, N.J. She has published in *College & Research Libraries*, *Library Quarterly*, *Library Trends*, *JELIS*, and the *Journal of Academic Librarianship*. Her book, *The Reference Encounter: Interpersonal Communication in the Academic Library*, was published by ACRL/ALA in 1999. She published *Web Research: Selection, Evaluation, and Citing*, with Allyn & Bacon, in 2002 (2nd edition forthcoming in 2006). Dr. Radford is active in numerous library and communication associations, including the ALA and the Association of Library and Information Science Educators (ALISE). Recent research involves investigations of interpersonal communication in VRS encounters. She has collaborated with Joseph Thompson from Maryland AskUsNow! on an analysis of 245 chat transcripts from the Maryland statewide VRS. She has presented recent chat research findings at ALA in 2004 and at the annual conferences of the Virtual Reference Desk in 2003 and 2004. Dr. Radford will devote 20% (one eight-hour day per week) of her time during September through May and two months during the summer to this project.

2) **Lynn Silipigni Connaway, Ph.D.**, is a Consulting Research Scientist III at OCLC's Office of Research. Prior to joining OCLC Research, she was the Vice-President of Research and Library Systems at netLibrary. In this position, she supervised usability studies for system design. She has been on the faculty of two library and information science programs and the director of the Library and Information Services program at the University of Denver. Dr. Connaway received her doctorate at the University of Wisconsin-Madison. Before receiving her doctorate, she worked in public and elementary school libraries. She is an expert in the use of focus group, in-depth, and case study interviewing and is a frequent author and speaker on issues of information organization, comparative collection assessment, information use, and in particular, use of electronic resources and e-books. She is an active member of library and information science associations, including ALA, ALISE, and the Association for Information Science and Technology (ASIST). Dr. Connaway has co-authored the book, *Basic Research Methods for Librarians* (2004), 4th edition, with Ronald R. Powell. She was the recipient of one of the first

Radford & Connaway: Seeking Synchronicity: Evaluating Virtual Reference Services from User, Non-User, and Librarian Perspectives. (A research proposal; see cover page for full citation.)

ALA grants focusing on electronic sources (1995, Carroll Preston Baber Research Grant), and, cumulatively, has supervised nine research grants. Currently, Dr. Connaway is a co-investigator of a two-year IMLS grant, awarded to Ohio State University in 2004, to investigate the information-seeking behaviors of college and university faculty and students. She will devote 33% (13.5 hours per week) of her time for each year of the two-year period to this project.

Curricula Vitae of the proposed co-investigators and the internal advisory board from Rutgers University and OCLC QuestionPoint have been included in the application package.

c. Management Plan

Co-principal investigators (PIs) Connaway and Radford will share responsibility for the management and supervision of the project equally, through a team approach to ensure effective co-ordination of all activities. The project manager (post-doctoral student to be recruited) will help to coordinate and distribute the workload in consultation with the PIs. All research protocols and instruments will be developed by the PIs in consultation with the Rutgers advisory board. All focus groups and analyses of focus group data will be conducted by the PIs. Survey analysis, transcript analysis, and phone interviews and analysis will be performed by doctoral and masters students under the direction of the PIs and the project manager. Responsibility for administering the budget will be shared by the PIs, who will also coordinate the research phases, logistics and dissemination of results with intellectual guidance from the advisory board. Throughout the project, interim target dates and schedules will be developed and monitored by the PIs to assure that all deadlines will be met. The PIs will take full responsibility for keeping in close contact with IMLS and for writing and delivering all required project reports and updates.

5. Dissemination

Results from this research will be widely disseminated to the global LIS community through: 1) presentations at national professional and scholarly LIS conferences; 2) publication in juried LIS journals and conference proceedings; 3) postings on the OCLC Research and Rutgers University Web sites; and 4) postings on the digital reference librarian's listserv (dig_ref).

Research will be submitted for possible presentation at the following conferences: Association of College and Research Libraries (ACRL), American Library Association (ALA), the Virtual Reference Desk (VRD), the Association for Information Science and Technology (ASIST), and the Library Research Seminar IV (LRS IV). In addition, at least four articles will be submitted for publication in refereed journals including the *Journal of the Association for Information Science and Technology (JASIST)*, *Library and Information Science Research (LISR)*, *Library Quarterly (LQ)*, and *Reference and User Services Quarterly (RUSQ)*, and conference proceedings, including ASIST and VRD. These articles will explain the research methodology, the VRS literature, the results, and recommendations for practice and system design. OCLC Research will design and host a project Web site that will make project reports, periodic updates, and research findings available. Rutgers University's Web site will link to this site. OCLC Research has an open access policy with pre-prints of all reports available on the OCLC Research home page. As appropriate, brief descriptions of research findings will be posted to the digital reference librarian's listserv (dig_ref) with invitations to attend conference presentations or to visit the Web sites to obtain more information. This listserv is one of the most frequently used means for virtual reference librarians to communicate with one another and, as such, is seen as a critical means for disseminating findings.

6. Sustainability

This project will be sustained in numerous ways. The theoretical model of VRS will be made available for other researchers to implement and test. As the research is made available and

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cited, it will influence the development of a user-centered VRS research agenda, as well as the development of software and interface design for VRS for both librarians and the service providers. With the inclusion of QuestionPoint staff on the local advisory board, cooperation will be assured throughout the project and the findings will be implemented in VRS system design. Another indication of sustainability of the project would be subsequent funding opportunities for the co-investigators to build on this research. Dr. Radford has studied reference services for 20 years. She has investigated user perceptions of success in FtF encounters and now in virtual settings, and will continue reference service evaluation and user-centered inquiry within her ongoing and robust research agenda.

One of the most functional demonstrations of sustainability would be the development of more effective VRS that meet users' information needs. OCLC, and perhaps other VRS providers, will use the results of this research to develop VRS systems that will serve to sustain and build upon the findings, measuring impact through subsequent evaluation.

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Appendix A
Radford Classification Scheme for
Interpersonal Communication in Chat Reference Transcripts

Librarian - Relational Facilitators

LF 1 Rapport Building

- A. Seeking reassurance/confirmation/self-disclosure
- B. Offering confirmation
 - 1. Inclusion (e.g, let's..., why don't we do x)
 - 2. Approval
 - 3. Empathy
- C. Self-disclosure - Providing information about self
 - 1. Offering personal opinion/advice/value judgment
 - 2. Admitting lack of knowledge/at a loss as to where to search
 - 3. Explaining search strategy
- D. Offering reassurance
 - 1. Encouraging remarks/praise
 - 2. Enthusiastic remarks
- E. Interjections
- F. Use of informal language
- G. Repair/self-correction
- H. Humor

LF 2 Deference

- A. Use of polite expressions
- B. Thanks
- C. Apology
- D. Use of self-deprecating remarks

LF 3 Compensation for Lack of Nonverbal Cues

- A. Uses ellipsis to indicate more to come
- B. Punctuation for emphasis
- C. Use of abbreviations (e. g., LOL)/alternative spelling
- D. Use of ALL CAPS
- E. Emoticons
- F. Use of repeated punctuation (e.g., !!!)
- G. Spells out nonverbal behaviors (e.g., grin, wink wink, ha ha)

LF 4 Greeting Ritual

- A. Scripted
- B. Unscripted

LF 5 Closing Ritual

- A. Scripted
- B. Unscripted

Client - Relational Facilitators

CF 1 Deference

- A. Thanks
- B. Agreement to try what is suggested/to wait
- C. Use of polite expressions
- D. Apology
- E. Suggesting strategy or explanation in tentative way
- F. Use of praise, admiration
- G. Expressions of enthusiasm
- H. Use of self-deprecating remarks

CF 2 Rapport Building

- A. Empathy/confirmation/reassurance
- B. Self-disclosure
- C. Seeking reassurance
- D. Interjections
- E. Use of informal language
- F. Repair/correction
- G.. Humor

CF 3 Closing Ritual

- A. Nonscripted
- B. Explanation of signing off abruptly

CF 4 Compensation for Lack of NV Cues

- A. Use of abbreviations (e.g., LOL)/Alpha-numeric shortcuts (e.g., L8R)
- B. Use of repeated punctuation (e.g., ???)
- C. Use of ALL CAPS
- D. Use of ellipsis
- E. Punctuation for emphasis
- F. Alternative spelling
- G. Emoticons
- H. Spell out nonverbal behaviors (e.g. grin, wink wink, ha ha)

CF 5 Greeting Ritual

Librarian - Relational Barriers

LB 1 Relational Disconnect/ Failure to Build Rapport

- A. Robotic answer
- B. Reprimanding
- C. Limits time
- D. Lack of attention - Ignoring question
- E. Condescending
- F. Ignoring user self-disclosure
- G. Misunderstands user's question
- H. Inappropriate script
- I. Failing to offer reassurance
- J. Mirrors user's rude behavior
- K. Disconfirming
- L. Ignoring humor
- M. Use of inappropriate language/profanity

LB 2 Negative Closure

- A. Librarian continues after user has disconnected
- B. Abrupt ending
- C. Disclaimer
- D. Premature/Attempted Closing
- E. Ignoring cues that user wants more help
- F. Premature referral
- G. Sends to Google

Client - Relational Barriers

CB 1 Closing Problems - Signing off abruptly

CB 2 Relational Disconnect

- A. Impatience
- B. Poor attitude/rude/insulting/FLAMING
- C. Disconfirming (e.g., I already have that info.)
- D. Use of profanity or inappropriate language
- E. Failure/refusal to provide information when asked
- F. Derisive use of spelling out NV behaviors
- G. Mistakes/Misunderstandings (e.g., user types wrong word, provides wrong information)

Appendix B
RECOMMENDATIONS FOR FACILITATING
INTERPERSONAL COMMUNICATION IN VIRTUAL REFERENCE ENCOUNTERS

General Notes

- Remember that your interpersonal skills are transferable to virtual environments.
- There is a general misunderstanding that interpersonal niceties are not important in virtual settings. Interpersonal aspects are present and vitally important.
- The large majority of time spent in virtual interactions is spent in the searching process, not in interpersonal exchanges.
- This checklist is offered as a guide. Use your judgment in deciding what is appropriate and comfortable for your personal style and preferences.

Greeting

- Give a personal greeting after the script. This can be just a quick “Hi!”
- When reading user’s initial question, look for any self-disclosure or indications that the user is seeking reassurance (Can you help me?). Respond appropriately.

Strategies for Building Rapport

- As appropriate, be willing to self-disclose, to provide information about yourself, to use “I” statements. This can mean:
 - Offering personal opinion/advice/value judgment (e.g., I think that you will have more success if you do X; or I have used this strategy before, and it works!)
 - Admitting lack of knowledge (e.g., I don’t know what you mean, could you be more specific? I don’t know this term; can you tell me what it means?)
 - Asking for confirmation as needed (e.g., Is this what you mean?)
- Acknowledge user self-disclosure (e.g., “I’m sorry you’re not feeling well and cannot travel to your library, let’s see how I can help.” Then, at the closing, “feel better soon!”)
 - Be empathetic when users self-disclose difficulty or frustration. (e.g., It is frustrating when our technology doesn’t work!)
- Include user in search process with inclusive language (e.g., Let’s try this; Would it be ok if we...).
- Indicate your approval as appropriate (e.g., That’s great! or Good for you!)
- Offer reassurance when users indicate that they are tentative, or unsure of how to proceed.
 - Realize that users can be fearful of your disapproval (if, for example, they have poor computer skills).
 - Use encouraging remarks, praise, and enthusiastic remarks as appropriate.
 - Humor also can be reassuring, as can the use of self-deprecating remarks (I’m not the world’s best speller either!)

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- Mirror the level of formality/informality of the user
 - If they use informal language, feel free to be less formal (as appropriate).
- Be deferential and respectful of all users.
 - Use polite expressions as appropriate (e.g., please, you're welcome).
 - Apologize as appropriate (e.g., I'm sorry, unfortunately, or oops!).

Compensation for Lack of Nonverbal Cues

- Mirror the user's style. If they use shortcuts, acronyms, abbreviations, and emoticons (smileys), feel free to do so also (as appropriate).
- If you are not comfortable using emoticons, you can spell out nonverbal behaviors or use interjections (e.g., hmmm, oh, ha ha, grin or <g>).
- If user is more formal in style, mirror this by being more formal in your word choice.
- Use repeated punctuation for emphasis (e.g., !!!, or ??),
- Be careful using ALL CAPS; may seem like a reprimand or shouting (e.g., Don't EVER).
- Periodically use ellipse (...) or the word "more" to avoid premature closure by the user (e.g., "please hold while I search..." or more...). You do not have to type a full sentence before hitting the send key. The ellipse can let users know that you are still there.

Closing

- Always give a personal closing. This can be just a quick "bye!"
- In the closing, as in the greeting, be sure to respond to self-disclosure, enthusiasm, or polite expressions (e.g., if the user says: "This is a great service!" Don't just send them the scripted closing, respond appropriately (e.g., "Glad you think so, thanks!"))
- Avoid premature closing. Make sure you have answered users question(s) completely. Ask if they need anything else before closing.
- Look for subtle cues that the user wants more help (e.g., "Well, thanks for your help" is one example, the "well" may indicate that user is settling for what you have provided, but really wants more.)

Relational Barriers To Avoid

- Avoid robotic answers.
- Avoid sending an inappropriate script (e.g., a welcome script half-way through).
- Do not ignore user self-disclosure or use of humor. If the user makes a joke (even if it is lame!) respond with a ;-), or ha! or <grin>.
- Avoid failing to offer reassurance when the user seeks it.
- Do not ignore parts of questions or additional questions.
 - When dealing with a several part question, let the user know that you will take the questions in order.
 - If busy, indicate that you will start with question one, and may have to answer the others by email.
- Avoid being condescending or disconfirming.

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- Avoid negative closure.
 - Premature Closing – make sure that you have answered all questions.
 - Abrupt ending – let user know you are going to close.
 - Disclaimer – do not indicate that a question is unanswerable/problematic before checking; many things previously unavailable may now be accessible. Provide a good referral if you are unable to answer a question.
 - Never ignore cues that the user wants more help, even if it means asking him/her to wait while you help others.

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RECOMMENDATIONS FOR VIRTUAL REFERENCE ENCOUNTERS WITH RUDE OR IMPATIENT CLIENTS

- Remember you have skills and experience in dealing with rude/impatient people in face-to-face encounters – these skills can be just as effective in virtual encounters.
 - Use your common sense, intuition, and experience to defuse problematic encounters.
- Do not “mirror” rude behavior; this only provokes more rudeness.
- Be polite and professional at all times.
- Resist the urge to reprimand or admonish users for rude behavior or FLAMING, again this only provokes more rude behavior.
- Avoid jargon or language that will create a barrier or send the message that you are blindly following the rulebook.
- Apologize to the user as appropriate, this does not mean that you are accepting blame.
 - An apology can diffuse potentially rude behavior (e.g., “I’m sorry that you had to wait so long; our service is very busy today” or., “I’m sorry that I can’t help with your request this time, please visit your local library for that information.”).
- When users are impatient (“Hurry, hurry!”), let them know realistically how long you think that the search for the information they need will take.
 - If you estimate that it will take more than a minute or so, present alternatives and let them know how long they will take (e.g., “I know you are in a hurry, but this will take about 4 to 5 minutes. Can you wait?”)
 - If they can’t wait, apologize (e.g., I’m sorry I can’t answer your question quickly, but I can email that answer to you within 2-3 days).
- If the user complains about library service or another librarian, thank them for bringing their concern to your attention and promise to follow-up.
 - Regard a complaint as a gift, as a way to improve service.
- Do not be condescending to a person with a “simple question.” Sometimes parents are helping their children with homework and you may insult them. Treat all users with equal courtesy and respect.
- Realize that rude or impatient users are in the minority, but understand that you will encounter one now and then.
 - Your polite response to them instructs them on how to use the service properly in the future.
- Do not take rude behavior personally. Users may be stressed by deadlines or other life problems and their rudeness and impatience usually has nothing to do with you or your service.

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GUIDELINES FOR USERS OF ASK-A-LIBRARIAN CHAT REFERENCE SERVICES

Ask-A-Librarian Services – Help at Your Keyboard!

Can't get to the library? Working from home and need some information that you can't find on Google? Getting frustrated or feeling lost? No matter where you are, as long as you can access the Web, you can get help from expert librarians, available through Ask-A-Librarian virtual reference services. Check your college campus or public library's Web page, or call the reference desk to find out if your library offers a chat or email reference service. Several states now have state wide Ask-A-Librarian services that are easily accessible through the Web. Some services have limited hours, some are available 24 hours a day, 7 days a week so check your library's Web site for details.

To get you started, these recommendations will save you time and help you to get the most from using Ask-A-Librarian live chat reference services.

Before You Sign On

- Don't wait until the last minute before using a chat reference service. These services are becoming busier. Just like your experiences at a regular library reference or information desk, there may be a queue of users ahead of you.
- Don't expect an immediate answer. Depending on how complex your query is, the librarian may take several minutes to search. If you are in a hurry, tell the librarian your time constraints when you sign on.
 - Example:** "I need information on the impact of TV violence. I have to leave this computer station in 10 minutes, can you help me quickly?" (If the librarian can't, he/she will tell you.)
 - Instead of:** "Help me find information on TV violence. I am in a hurry!"
- Think about your topic. Write down your question in a short, specific statement that helps librarian to focus on
 - Topic
 - Type of resources you need
 - Amount of information needed
 - Any additional information you think would help
 - Example:** "I need recent journal articles about the impact of TV violence on teens for a 10 page paper for my undergraduate communication class. It is due in 7 days."
 - Instead of:** "I need information on TV violence."

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- Write down a list of the resources you have already checked so far. Librarian may ask: “Have you checked the library’s online catalog yet?” If you are just starting, tell the librarian.
Example: “I need statistics on gun violence for a debate. I am just getting started and don’t know where to begin.”
Instead of: “I need statistics on gun violence.”
- If you have already located an ideal resource, tell the librarian. If you know of a title or author, give this information.
Example: “I found a great journal article on this topic by J. Doe, published in the Atlantic Monthly.”
- Think of synonyms alternative terms for the topic, both narrower and broader. The librarian may ask you for other subject terms.
Example: If your subject is “teen” alternative terms are “adolescent, young adult, teenager, or juvenile.” Narrower: “boy or girl;” Broader: “young person, youth, or minor.”

During the Chat Session

- Use short replies and hit the send button between sentences.
- Be informal, but courteous. Use polite expressions as appropriate. Acknowledge humor. Use chat shortcuts, but be careful not to overuse. Alternative spellings may not be clear to the librarian.
- Don’t be afraid to admit you don’t know something or have just begun to look for information. It is okay to say “I don’t know” or “I’m not sure” or even “I am confused.”
- Give feedback when asked. The librarian is trying to understand your question with probe questions.
- Be patient! Expect some “delayed reactions” from the librarian. Remember that some questions require searching several Web sites and may take some time.
- Be persistent. If you have a multi-part question, tell the librarian at the beginning and remind him/her gently before ending the session if questions remain unanswered.

Ending the Chat Session

- If you have to disconnect or leave the computer suddenly, tell the librarian, and indicate how long you will be gone.
Example: Use “BRB” (be right back) or “Got to go! Will sign back on in 10 mins.” Or “I have to go now. Please email me the information (& give your email address).”
- Ask the librarian to email you the transcript of the session at the end. This is frequently possible and useful for later reference.
- When you want to end, tell the librarian. A “thank-you” and closing statement are always appreciated and signal the librarian that you are ending the session.
Example: “I have to go now, thanks for your help, bye.”

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