"Seeking Synchronicity: Evaluating Virtual Reference Service from User, Non-user, and Librarian Perspectives"

IMLS Interim Performance Report
May 1, 2006

Award Number:
- ✓ LG-06-05-0109-05

Awardee Institutions:
- ✓ Rutgers, The State University
- ✓ OCLC Online Computer Library Center

Interim Performance Report:
- ✓ From October 1, 2005 – To May 1, 2006

Co-Principal Investigators:

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2.0 Performance Description

2.a Purpose of the Project:

"Seeking Synchronicity: Evaluating Virtual Reference Services from User, Non-user, and Librarian Perspectives," is studying and evaluating the practice, sustainability, and relevance of virtual reference services (VRS). The partnering institutions are Rutgers University School of Communication, Information and Library Studies and OCLC Online Computer Library Center Inc. VRS are human-mediated, Internet-based library information services. The rapidly increasing public use of remotely accessed, digital reference resources, such as full-text indexes and databases, has increased the demand for libraries to provide reference services online, and this project aims to improve libraries' ability to respond to the demand. The project focuses on live chat VRS and will develop a theoretical model 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 will produce a research agenda for user-centered VRS.

2.b Research Activities:

IRB Approval and Human Subjects Certifications:
Prior to starting the grant, it was necessary for the grant protocol to receive Rutgers' IRB approval, and this was accomplished in November, 2006. All members of the grant team have also received Human Subjects Certification.

Research Team Staffing and Research Space:
The grant proposal outlined specific positions to be filled in order to sufficiently carry out all grant related research. The complete grant team has been formed, which includes a full-time project manager, two Ph.D. and three MLIS graduate assistants. Rutgers has assigned two offices to effectively house all team members. OCLC has also dedicated office space for their team members. The grant team holds a weekly meeting to address projects and timelines, which includes members of the team within Rutgers and at OCLC via conference call. The advisory board members are frequently updated about the progress of the research and are invited to the team meetings. It should be noted that Dr. Michael Lesk has also joined the internal Rutgers Advisory Board group. Please see Attachment A for his brief vita.

Results:
According to the scope of research outlined in the Grant, there are four primary means of data collection: chat transcripts, focus groups, telephone interviews and online surveys. Phase I involves transcript analysis and focus groups.

Transcript Analysis:
Since the start of the grant in October, 2006, 450 VRS transcripts have been collected. 300 have been analyzed for the following features: Type of Question, Subject of Question, Geographic Location, Type of Library, Session Duration, and Dimensions of Relational Content as indicated

between the VRS Users and Librarians. Analysis has begun on the remaining 150 transcripts, which have already been stripped of identifying information. Subject coding is nearing completion for this group. 50 new transcripts are being randomly selected each month.

Focus Group Interviews:
During Phase I, focus groups of VRS users, non-users, and librarians are being conducted to gain insight into their perspectives and to inform development of online surveys and phone interviews. To date, four focus group interviews have been conducted: two with VRS librarians and two with non-users, involving a total of thirty-six participants. Focus groups were audio-taped and verbatim transcripts have been produced. Additionally, theme analyses of the transcripts have been completed to identify broad categories and specific information that pertains to the research project.

Additional Focus Group Interviews:
Because of the rich information and insight gained from the adolescent ("screenagers") non-user focus group interview, two additional focus group interviews with this cohort have been scheduled. One will be held on May 1, 2006 in suburban Philadelphia, PA and the other in Elizabeth, NJ, on May 15, 2006.

Two focus group interviews with VRS users are being arranged, and will be completed by June 30, 2006. Fifteen people have agreed to participate in the VRS user focus group interviews and these interviews will be conducted by June 30, 2006.

Timeline Updates:
As outlined in the timeline for this phase of the research, all focus group interviews, transcriptions and theme analyses will be completed by June 30, 2006.

The grant timeline specifies that phone interviews and online surveys will take place in May 2006 with the librarian participants and in November and December, 2006 with the VRS users and non-users. Based on the focus group interview results, we are in the process of designing these survey instruments and evaluating web tools for the development of the online survey. The next Interim Report will include results from these research activities.

2.c Project Outputs and Activities

Seeking Synchronicity Website:
In January 2006 an official website, hosted by OCLC, was activated. The web address is http://www.oclc.org/research/projects/synchronicity/. Since the inception of the research use of the site continues to increase over time. We are examining how many visits occur on the grant website and identifying which website contents receive the most activity to gain insight into how conference presentations and publications influence traffic to the website and to better determine the information that generates the most interest. As can be seen in Table 1 below, web site visits constitute all the activity of one visitor's browser to the web site, and represents the number of visits that access files. Views represent the request to display or receive a specific site file, which is usually following a link to another page in the website.

Table 1

Seeking Synchronicity Web Site Statistics	January 2006	February 2006	March 2006	April 2006
Visits	104	392	437	458
Views	108	435	625	729

Conference Presentations:

Marie L. Radford and Lynn Silipigni Connaway presented "Seeking Synchronicity: Evaluating Virtual Reference Transcripts," at the national ALISE (Association of Library and Information Education) conference which took place in San Antonio, TX, in January 2006. This juried presentation reported the initial findings of the analysis of the relational (interpersonal) elements of the live chat transcripts and was well received by an audience of LIS researchers, faculty members, and doctoral students. As per the proposal, the Principal Investigators are responsible for presenting grant results at six national conferences, of which the ALISE conference was the first. In addition, Marie L. Radford and Lynn Silipigni Connaway presented the juried paper "Relational Communication in Chat Reference" at the New Jersey Communication Association conference on March 25, 2006.

Upcoming Conference Presentations:

Two more juried conference papers have been accepted. On June, 24, 2006, Marie L. Radford and Lynn Silipigni Connaway will give their second national presentation: "Facework in Chat Reference Encounters" at the American Library Association (ALA) annual conference in New Orleans, LA. In addition, Marie L. Radford and Lynn Silipigni Connaway will present "Virtual Windows: Observing Chat Reference Encounters through Transcript Analysis" at the International Association for People-Environment Studies (IAPS 19) Conference at Bibalex 2006 Bibliotheca Alexandrina in Alexandria, Egypt. This international conference will take place September 11-16, 2006. It is designed as a forum for scholars who have an interest in an interdisciplinary discussion and in the study of the transactions and interrelationships between people and their socio-physical surroundings and how research and information exchange impacts people, the environment and professions. Please see Attachment B for a full listing of grant research presentations and publications.

2.d. Research Outcomes:

Broad Interest in the Seeking Synchronicity Research:

As mentioned above, the first national presentation of grant results at ALISE in January 2006 was well received. An output from this conference was an article written by one of the audience members at ALISE, Dr. Carol Tenopir. Her monthly column in *Library Journal*, March 1, 2006, was entitled: "What Chat Transcripts Reveal." Dr. Tenopir's full-page column summarized results from the Seeking Synchronicity transcript analysis and disseminated the project web site address to a national audience. Please see the text of the article in Attachment C.

Evolving Coding Schemes:
Marie L. Radford had previously developed a coding scheme to analyze relational (interpersonal) aspects of the interaction between VRS users and librarians. During Phase I, this coding scheme has been revised and enhanced, which will add to the field of research in interpersonal communication, computer-mediated communication, and discourse analysis as well as research in library and information science.

Initially, a second Radford coding scheme that was developed for classifying subjects of chat questions was being utilized. However, after coding 300 transcripts, the co-principal investigators decided to use the *Dewey Decimal Classification and Relative Index* (DDC) to classify chat questions since this is a well-developed and established classification scheme, which will increase the research product's accessibility and connectivity to the wider library community. DDC has not yet been applied to classify reference questions, which will be a unique outcome of this grant research.

2.e. Other Results

Invited Presentations:
Marie L. Radford also disseminated preliminary results from the grant at two invited presentations: " 'R U There Dawg?' Interpersonal Communication in the Virtual Reference Environment," at a colloquium at Emporia State University, Emporia, Kansas, on April 7, 2006; and "Far Out or Forthcoming? Foreshadowing the Future of Library Service Excellence," at a keynote address at the Archons of Colophon, New York City, NY, on April 3, 2006.

Submitted Proposals:
Marie L. Radford and Lynn Silipigni Connaway have submitted three additional paper proposals for possible presentation. Two of these are at national scholarly conferences: 1) "Shaping the Future Realities of Virtual Reference" which was submitted with Jeffrey Pomerantz for possible presentation at the American Society for Information Science and Technology Conference, in Austin, TX, November 3-9, 2006; and 2) "Investigating Encounters at the Virtual Reference Desk" submitted for possible presentation at the National Communication Association Annual Conference, in San Antonio, TX, November 15-19, 2006. The third is at a local conference: 3) " 'Screenagers' and Virtual (Chat) Reference: The Future is Now!" submitted for possible presentation at the New Jersey Association of School Librarians, in Long Branch, NJ, October 29-31, 2006.

2.f. Additional Comments

One additional outcome of the grant is that team members have been trained on NVivo 7 qualitative research software by QSR. Version 7 of this product has just been released. Three team members (Co-PIs Connaway and Radford, and Project Manager DeAngelis-Williams) were in the first group of researchers to be trained on this software on March 13-14, 2006.

Subsequently, DeAngelis-Williams and Radford presented "Introduction to NVivo 7 Software and Analysis of Chat Reference" to the Rutgers School of Communication, Information, and Library Science faculty and doctoral students on April 17, 2006. This presentation included the dissemination of the findings from the preliminary transcript analysis, and introduced this innovative software and method of analysis to the SCILS research community.

3. Certification

In submitting this report, I certify that all of the information is true and correct to the best of my knowledge.

Name: _____   Title: <u>Co-Project Invesitgator</u>   Date: <u>May 1, 2006</u>

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Summary: In the 1960's I worked for the SMART project, wrote much of their retrieval code and did many of the retrieval experiments, as well as obtaining a PhD in Chemical Physics. In the 1970's I worked in the group that built Unix and I wrote Unix tools for word processing (*tbl*, *refer*), compiling (*lex*), and networking (*uucp*). In the 1980's I worked on specific information systems applications, mostly with geography (a system for driving directions) and dictionaries (a system for disambiguating words in context), as well as running a research group at Bellcore. In the 1990s I built a large chemical primary journal system, the CORE project, with Cornell, OCLC, ACS and CAS. I've also been one of three people who worked with NSF on the original report which prompted the Digital Library Initiative, and I've worked with the Commission on Preservation and Access addressing digital preservation issues. My group at Bellcore produced the SuperBook system for information browsing and searching, the first electronic system shown to be better than paper; obtained funding from ARPA and NASA; and also produced TMM (a product used to manage telephone networks) and other projects research of relevance to the telephone business. I spent four years at NSF as head of the Division of Information and Intelligent Systems, funding research in databases, robotics, digital libraries, computers and society, human-computer interfaces, and knowledge-based systems.

In this context I specifically encouraged international research programs in digital libraries and managed the CISE-ITR funding program at NSF.

Employment: Michael Lesk is now employed at the Internet Archive working to bring more books online, and will join the Rutgers faculty in September 2003. From 1998 to 2002 he was Division Director for Information and Intelligent Systems at the National Science Foundation. From 1995 to 1998 he was a Chief Research Scientist Bellcore, while from 1983 until September 1995 he was Executive Director of the Computer Science Research Department (under various names), Earlier (1969-1983) he had been a member of staff in the Computing Science Research Center at Bell Laboratories. From 1983-1985 he was also adjunct lecturer in Computer Science at Columbia University. During most of 1987 he was visiting University College London as a Senior Research Fellow of the British Library. He is also Visiting Professor at University College London in Computer Science. and has previously been a visitor in Librarianship and Archive Studies.

Education: Ph.D in Chemical Physics, Harvard University, 1969.
            B. A. in Physics and Chemistry, Harvard College, 1964.

Specialties: My research interests recently have been in digital libraries; for several years I managed the funding of this research at NSF. Before that I worked on an online chemistry library supporting both text and image representations of journals, and studying its use by chemists. I also studied access to old newspapers, scanning standards, and digital preservation. Other interests include access to data bases, including use of online dictionaries to improve document retrieval, a program to do computerized route finding and give driving directions, and an experiment comparing menu-oriented and command-oriented human interfaces to a library catalog system. I've also worked on computer typesetting tools, electronic mail, computer networking, compiler generators, and technical tools for intellectual property protection. Areas of research have included artificial intelligence, information retrieval, compilers, human factors, networking, and databases. Among software tools written are the original versions of the Unix utilities UUCP, TBL, and LEX.

Teaching

I've taught three times at Columbia as an adjunct (Office Information Systems, Information Retrieval, and Economics of Digital Libraries). I'm currently teaching half a course at Rutgers as an adjunct, sharing lectures in Digital Libraries with Tefko Saracevic. I've supervised one graduate student, Karen Kukich, from the University of Pittsburgh.

A couple of publications

Michael Lesk, *Practical Digital Libraries: Books, Bytes and Bucks,* Morgan Kaufmann, San Francisco (1997). ISBN 1-55860-459-6.

M. E. Lesk, *Electronic Libraries and Electronic Journals,* British Library, London (1993). Tenth British Library Research Lecture, ISBN 0-7123-3287-1.

M. E. Lesk, "The CORE Electronic Chemistry Library," *Proc. 14th ACM SIGIR Conference,* pp. 93-112, Chicago (October 13-16, 1991).

M. E. Lesk, "Going Digital," *Scientific American,* 276, 3, pp. 58-60 (March 1997).

M. E. Lesk, "Computer Software for Information Management," *Scientific American,* 251, 3, pp. 162-172 (Sept. 1984).

More recently I have taken to online publication. The two items which attracted most attention have been:

How Much Information Is There in the World http://lesk.com/mlesk/ksg97/ksg.html;
And *Projections for Making Money on the Web* http://lesk.com/mlesk/iih/iih.html

"Seeking Synchronicity: Evaluating Virtual Reference Service from User, Non-user, and Librarian Perspectives"

Presentations as of May 1, 2006

Juried Conference Papers Presented

Radford, M. L. & Connaway, L. S. Seeking synchronicity: Evaluating virtual reference transcripts. Presented at the 2006 ALISE Conference, San Antonio, TX, January 16-19, 2006.

Radford, M.L. & Connaway, L. S. Relational Communication in Chat Reference. Presented at the 10th New Jersey Communication Association Conference, Montclair State University, NJ, March 25, 2006.

Juried Conference Papers Accepted for Presentation

Radford, M.L. & Connaway, L. S. Virtual Windows: Observing Chat Reference Encounters through Transcript Analysis. Accepted for presentation at a Symposium: "The Role of Observation and the Health of Community" for presentation at the 19th International Association for People-Environment Studies, Alexandria, Egypt, September 11-16, 2006.

Radford, M.L. & Connaway, L. S. Facework in Chat Reference Encounters. Accepted for presentation at the Library Research Round Table Research Forum "Librarians as Research Subjects," American Library Association Conference, New Orleans, LA, June 24, 2006.

Invited Presentations

Radford, M. L. & DeAngelis – Williams, J. Introduction to NVivo 7 Software and Analysis of Chat Reference, Presentation, Rutgers University, School of Communication, Information, & Library Studies, April 17, 2006.

Radford, M. L. "R U There Dawg?" Interpersonal Communication in the Virtual Reference Environment, Colloquium presentation, Emporia State University, Emporia, Kansas, April 7, 2006.

Radford, M. L. Far Out or Forthcoming? Foreshadowing the Future of Library Service Excellence. Archons of Colophon, New York City, April 3, 2006.

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Radford, M.L., Connaway, L. S., & Pomerantz, J. Shaping the Future Realities of Virtual Reference. Submitted for possible presentation at the American Society for Information Science and Technology Conference, Austin, TX, November 3-9, 2006.

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Radford, M.L. & Connaway, L. S. "Screenagers" and Virtual (Chat) Reference: The Future is Now! Submitted for possible presentation at the New Jersey Association of School Librarians, Long Branch, NJ, October 29-31, 2006.

ONLINE DATABASES
What Chat Transcripts Reveal
By Carol Tenopir

CHAT REFERENCE PROVIDES NEW ways to interact with patrons. Research by Marie L. Radford of Rutgers University (mradford@scils.rutgers.edu) and Lynn Silipigni Connaway of OCLC (connawal@oclc.org), supported by the Institute of Museum and Library Services, will replace suppositions about how chat conversations progress in ways satisfactory to both patrons and librarians. They are conducting focus group interviews, online surveys, and telephone interviews of virtual reference service (VRS) users and nonusers and VRS librarians. They also plan to examine over 1300 anonymous transcripts from chat services. Rapport-building, deference, and identifiable beginning and closing "rituals" all have a place in virtual reference. And as with face-to-face reference, some patrons and librarians are better at it than others.

Radford and Connaway reported on a sample of 300 transcripts at the 2006 Association for Library and Information Science Education meeting. They find that chat reference conversations are full of interpersonal "relational facilitators" and "relational barriers." Facilitators improve communication, while barriers have the opposite effect. (For more on the research, go to the project web site at www.oclc.org/research/projects/synchronicity.)

Relational facilitators

Although both librarians and patrons work on rapport-building, librarians do it more often. Words such as *thanks* and polite conversational fillers build trust between two people engaged in a remote but intense interaction. Rapport-building includes providing information about oneself, offering reassurance, using humor and informal language, and demonstrating interest or approval. Greeting ritual expressions are a good starting point for rapport; librarians make three to four times as many as patrons. Unscripted greeting rituals (e.g., "Hi, Pat, your question is interesting. Let me see what I can find.") elicit more positive interaction from patrons than seemingly robotic and cold prewritten scripts (e.g., "Welcome to our chat service. The librarian is reading your question now.").

Deference, the most common behavior by patrons, might reflect the balance of power between questioner and answerer, but it is also the second most common behavior by librarians. Deference is shown by the use of thanks, praise, apologies, or expressions of courtesy or respect for the other's experience, knowledge, or point of view.

Positive closing rituals are important, whether or not the needed information has been found. Although Radford and Connaway's analysis cannot measure the ultimate result, positive closing rituals help determine whether or not a patron returns to chat reference.

In a face-to-face or telephone reference transaction, nonverbal clues (body language or tone of voice) can provide positive (or negative) feedback. Chat relies on representations of nonverbal clues. Emoticons such as smiley faces, common abbreviations like lol (laughing out loud), and use of boldface type or punctuation are the most common. Both librarians and patrons use them to move the conversation forward and supplement traditional rapport. When a librarian initiates such interaction, the patron often follows. An ellipsis (....) used by the librarian is an effective cue to the user that more is coming.

Relational barriers

Naturally, chat reference interactions are not always positive. Closing problems are the most common for both groups, but nearly twice as many of these (including the brusque departure of the "disappearing user") come from patrons.

The other most common barrier is what Radford and Connaway call "relational disconnect," whereby the two partners in the conversation just don't understand each other, and rapport fails. At their worst, these conversations can go up in flames fast, with SHOUTING (all caps) or impatience ("hurry up" or "why is it taking so long") that degenerates into abusive language. Finally, the librarian ends the interaction abruptly with a robotic script inviting the user to return when more patient or with a more appropriate question. More often, however, the patron feels that the librarian is not understanding or not providing useful information, even after ritual positive expressions (reassurances of trying to help). Relational disconnect may lead to negative closure, but transcripts show that patrons have negative closure or problems with closing four times as often as disconnect.

Improving success

There is good news: positive relational facilitators outnumber relational barriers in chat transcripts by a ratio of 9 to 1 for librarians and about 3.5 to 1 for patrons. When informal, nonverbal, unscripted, positive interactions are initiated by the librarian, chances for a positive interaction and positive response from the patron increase.

A successful reference interaction relies on both good conversational skills (like face-to-face interactions) and a good answer to the question. Radford and Connaway looked at chat reference, but their analysis can help improve any interaction between librarian and patron.

Carol Tenopir (ctenopir@utk.edu) is Professor at the School of Information Sciences, University of Tennessee, Knoxville

> Rapport-building, deference, and beginning and closing "rituals" all have a place in virtual reference