Engaging Net Gen Students in Virtual Reference: Reinventing Services to Meet Their Information Behaviors and Communication Preferences

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Abstract:

To engage new users and sustain current ones, academic librarians need to explore a range of opportunities to extend existing services. The largest contemporary user cohort is the Net Gen, whose members demonstrate distinctly different communication and information seeking behaviors from older cohorts. The results of online surveys with virtual reference service (VRS) users and non-users provide fresh insights for the improvement and integration of new technologies and services to better meet the needs of Net Gen academic library users.

Introduction

Academic libraries are vying for information seekers' attention in today's increasingly crowded digital environment. When information resources were scarce, users were obliged to turn to the library, where these resources were organized, stored, and made accessible. Now digitized information is abundant, and easily searched by a variety of web-based, intuitive, search engines and social networks, so interest in library resources has become scarce and there is increased competition to capture the information seeker's interest.[1]

To remain viable, today's librarians must re-engineer to accommodate users' workflows and habits. Forward-looking library professionals have found it difficult to be flexible or to change quickly, because established practices have been deeply ingrained for centuries. An increasingly diverse, sophisticated, and mobile society has spawned a demanding user base with an array of information-seeking habits and needs.

Members of the Net Generation (Net Gen) (also known as Millennials or Echo Boomers) were born between 1979 and 1994, and raised in a socially networked technological environment. Their communication and information-seeking behaviors are distinctly different from those of previous generations. The youngest, born between 1988 and 1994 and who are now 15 – 21 years old, of the Net Gen cohort have such a strong affinity for electronic communication via computer, phone, television, etc. that they have been dubbed "screenagers."[2] Net Gen students comprise the largest cohort of today's academic library users and pose a special challenge for information service development. Prensky (2001a) has proposed that these "digital natives" who cannot remember life without computers, "…*think and process information fundamentally differently* from their predecessors" (np).[3] They take technology for granted and demand instant access to information.[4] Their world is an "infosphere" with blurred boundaries linking work, home,

and recreation.[5] Online communication styles for the Net Gen have evolved around instant messaging (IM) and chat rooms[6] They tend to be results-oriented and practical when looking for information. Used to turning to the Web for help, Google and Wikipedia have become familiar and trusted resources for information queries.[7] This generation prefers to learn actively and by discovery[8] and processes visual information efficiently.[9] Since academic libraries have evolved from the pre-Web, print-based culture, the proclivities for information- seeking, creation, and manipulation of today's students can lead to difficulties when interacting with current library systems.[10]

To attract these Net Gen students to academic library services, to engage them so that they understand the value and importance of our high quality resources, and to increase their comfort level in turning early and often to us to help meet their information needs, it is necessary to learn more about how and why this group of students acquires information, and to identify the factors that are critical in determining their perception of positive and negative experiences with library services. To discover ways to improve current library services and to guide the development of new services, the authors engaged in an extended research project that focused on virtual reference service (VRS), a natural environment for Net Gen students. This paper discusses findings that address the above issues and help to shed light on better ways to reach Net Gen students.

Description of Study and Methodology

"Seeking Synchronicity: Evaluating Virtual Reference Services from User, Non-User, and Librarian Perspectives"[11], an IMLS-funded project, provides insight into the Net Gens' perceptions of libraries and VRS. This national study uses multiple data collection methods and a firm grounding in communication theory to address issues concerning the evaluation, sustainability, and relevance of VRS for academic libraries. It also identifies ways to increase the visibility and use of VRS, and to improve service quality. This paper reports results from Phase III of the four-phase project which consists of an analysis of in-depth online surveys of 137 VRS users and 184 VRS non-users. Net Gen members (12-28 years old at the time of the survey) as well as older adults (29 years old and older at the time of the survey) were included to allow for a comparison of the two demographic groups.

The online survey included demographic, multiple choice, Likert-type, and open-ended questions. (See Appendix A for User Survey and Appendix B for Non-User Survey.) Responses to multiple choice and Likert questions were analyzed using descriptive statistical methods. Among the open-ended questions were two critical incident (CI) questions. The CI Technique (CIT) was developed by Flanagan[12] and asks respondents to remember and describe a memorable event/experience related to the phenomena being studied, in this case reference service. The VRS user CI questions asked the respondent to "Think about one experience in which you felt a chat reference encounter *achieved (or did not achieve) a positive result*." The VRS non-user CI questions asked the respondent to "Think about one experience in which you felt you achieved (or did not achieve) a *positive result* after seeking library reference services in any format" (see Radford, 2006 *Library Trends* for more information about CIT).[13]

Qualitative analysis of the respondent's CIs was grounded in the theoretical work of Watzlawick, Beavin, and Jackson (1967) and Goffman (1967).[14] Watzlawick, et al., proposed the axiom that every message has dual dimensions – both content (information) and relational (interpersonal) Following Watzlawick et al. and Goffman (1967) the authors have developed a category scheme for analyzing CIs which identified relational and content facilitators (which have a positive impact on librarian-client interactions) and relational and content barriers (which have a negative impact) This category scheme has evolved from research on face-to-face (FtF) reference encounters in academic libraries [15] and in live chat VR environments.[16]

All CIs, both positive and negative, that were elicited from VRS users and non-users were carefully analyzed and coded as being characterized as primarily content, primarily relational, or

both. In addition, each CI was further coded for content and relational facilitators and barriers, using the Expanded Critical Incident Coding Scheme for Face-to-Face & Virtual Reference.[17] The coding scheme was continually revised throughout the analysis process to better reflect the themes and sub-themes that were found in the data. The project team of four coders achieved a score of 98 % for intercoder reliability after consulting to resolve differences.

Recruitment of Participants

Participants were recruited through a variety of methods including: postings to listservs, announcements in university classes, paper flyers which were hung on college campuses, in super markets, and in public, academic, and school libraries, and through personal contacts. VRS users also were recruited through a pop-up invitation following a VRS session or on the VRS home page. Due to privacy issues, which precluded easy identification of VRS users from session transcripts, recruiting VRS non-users was easier than recruiting users. Although the sample was not random, an effort was made to recruit nationally and to target the Net Gen population as well as to obtain a mix of older adults. After the potential participants contacted the research team, a link to the online survey was distributed to the volunteers via email between July 25, 2007 and March 1, 2008. Respondents were paid $25 upon completion of the survey.

Participant Demographics

One hundred thirty-seven VRS users completed the online survey. The majority of these respondents were female, Caucasian, and between 29-65 years old. See Tables 1, 2, and 3.

[Insert Table 1]

[Insert Table 2]

[Insert Table 3]

One hundred eighty-four VRS non-users completed the online survey. The majority were female and Caucasian. Because of the effort made to recruit Net Gens, the majority of these respondents were between 12-28 years old. It is to be noted that VRS non-users can be library users, but they have never used live chat VRS. See Tables 4, 5, and 6.

[Insert Table 4]

[Insert Table 5]

[Insert Table 6]

Results

<u>Net Gen Compared to Older Adult Users of VRS</u>

Of the 137 total of VRS Users who took the online survey, 49 were Net Gen and 88 were adults 29 or older. The responses of the VRS users to the multiple-choice and Likert-type questions indicated differences based on age in attitudes toward the technological aspects of VRS and factors that lead them to use alternative methods to get information. Both Net Gen and older adult respondents were likely to be repeat users of chat reference. Convenience was a significant factor in the users' choice of VRS. However, convenience was rated as a very important or important factor by 100% of the Net Gen user respondents (as compared to 95% (84) of older adults) because it provides access to quick answers, the ability to multitask, and access to information late at night or on weekends.

Net Gens also valued VRS librarians pursuing answers for them and identified chat as a good starting point for finding information online. Compared to older adult users, the Net Gen users were more likely to report that chat was less intimidating than FtF reference, and that the librarians' reactions to their questions seemed clearer in chat than in FtF. Only 4% (2) of the Net Gen users indicated that FtF interaction was less intimidating than other reference formats, as compared to 16% (14) of the older adult respondents. In contrast, 76% (37) of the Net Gen users identified chat as the least intimidating format of reference, whereas 47% (41) of the older adult respondents indicated that chat was the least intimidating reference format.

The users indicated that VRS technology affected their selection of the service and believed that better technology would improve their chat experience. The Net Gen users indicated that faster and easier software, the capability to personalize the interface, reliable co-browsing, more hours of service, and additional ways to access information on how to use library technology, such as kiosks and cybercafés, would improve the VR experience. They also would like more experienced and tech-savvy librarians.

More Net Gen users than older adults mentioned that VRS was hampered by scripted messages and the coldness of the chat environment. Additionally, the Net Gens reported that slow connections, unhelpful answers, and non-subject specialists would discourage their VRS use. However, a larger percentage of older users indicated that platform incompatibility would discourage their use of VRS.

Why Users Select VRS

Convenience is the leading factor in user's selection of the VRS format. Users value access to immediate answers and the efficiency, cost-effectiveness, and service availability late at night and on weekends. In particular, the Net Gens indicated that the hours of availability, as well as the ability to multitask while engaging in VRS, contributed to their perceptions of convenience. In addition, the Net Gen users considered the virtual interaction much more enjoyable than other reference formats. Both the older adults and the Net Gens felt less intimidated by virtual interactions with librarians than in FtF encounters. The older adults considered relationship development as somewhat important to the virtual interactions but the Net Gens valued these relationships less.

Notwithstanding the reported benefits of VRS, the Net Gens tended to utilize the service only when they became "desperate" and had a need for quick answers. The Net Gens recommended VRS more to others than the older adult respondents. Thirty-one percent (15) Net Gen users decided to use chat reference because it was recommended to them.

Net Gen Compared to Older Adult Non-Users of VRS

Of the 184 total of survey respondents for VRS non-users, 122 were Net Gen and 62 were adults 29 or older. Generational differences and preferences also came to light in the analysis of the VRS non-user results. Of particular note, 58% (71) of the Net Gen non-users indicated that their ability to find resources and information online without the assistance of a librarian was excellent or very good. However, research has indicated that this confidence may be unfounded.[18] The older population did not share this over-confidence in their information-seeking abilities. In general, the older adults prefer FtF reference encounters more than Net Gen VRS non-users.

Net Gen non-users cited a number of important differences for their choices for interacting with librarians and for factors that contributed to their perspective of convenience for using the physical library. For the subset of non-users who prefer going to the library in person, 87% (76) of Net Gen non-users (N=87) rated the convenience of the physical library as important, including factors such as parking availability and being open during preferred hours, while 78% (40) of the older adult non-users (N=51) also rated convenience of the library as important. Convenience of remote information access, especially e-resources, and the ability to communicate virtually with

librarians from home is valued by Net Gen non-users. For the subset of non-users preferring electronic reference formats 95% (39) of Net Gen respondents (N=39) found such remote access to be very important or important, as opposed to 85% (11) of the older survey respondents (N=13).

Net Gen non-users indicated that developing a personal relationship with a librarian was less important than older adults who were more likely to value interacting with a specific librarian. Additionally, among a subset of non-users who described important aspects of mediated communication, 69% (28) of the Net Gens (N=41) valued the librarians' friendliness and politeness in mediated communication, compared to only 29% (4) of the older participants (N=14). Eighty-one percent (50) of the older adult non-users specified a partiality for FtF reference and the desire to build relationships and trust with particularly knowledgeable librarians. Of the Net Gen population, 71% (87) also preferred FtF interaction with a librarian. In addition to FtF interaction, VRS non-users had utilized other mediated reference modes. Seventy-eight percent (95) of the Net Gen non-users reported that they have never used the telephone for a reference query. Sixty percent (27) of the older non-users reported that they have not used the telephone for a reference question.

While the Net-Gen non-users valued convenience and the ability to access information from home, 49% (60) enjoyed using FtF interaction more than email, telephone, or text messaging. Although they enjoyed FtF librarian interaction, 51% (62) of the Net Gen population reported being less intimidated about email interactions with a librarian.

Differences in technology orientation also were found between the VRS non-user Net Gen and older respondents. When asked about the complexity of using chat reference, 35% (43) of the Net Gen participants indicated that it might be complicated, which is less frequent than older respondents (53%, 33). Only 16% (19) of the Net Gens mentioned typing skills as a concern in chat interactions compared to 35% (22) of the older adults. However, the Net Gen cohort was more concerned that their questions might annoy the librarian during the chat interaction.

Why Non-Users Do Not Select VRS

As was the case with VRS users, Net Gen non-users value convenience above all else when it comes to getting information. This finding may explain why they primarily get their information and resources themselves. Convenience was more important to Net Gen non-users of VRS than a personal relationship with a librarian, which differs from the older adult non-users of VRS. The Net Gen non-users identified the most important librarian qualities as knowledgeable, trustworthiness, and demonstrating persistence and friendliness. The major reason Net Gen participants did not use the service was because they had no knowledge that it was available to them. Other factors that contributed to the Net Gens' non-use of VRS are their beliefs that the librarian could not help them, the lack of service availability at all hours, and their satisfaction with other information sources. The older adult VRS non-users identified these same reasons for not using VRS, in addition to their lack of computer skills, slow typing speed, and the perceived complexity of the chat environment.

Net Gen VRS User Critical Incidents

For the CI questions, all VRS users were asked to think about one specific successful interaction and one specific unsuccessful interaction with a chat librarian, to describe each interaction, and to identify the factors that made these interactions positive or negative. Of the 137 respondents of the user survey, 129 (94%) described positive CIs and 68 (50%) described negative CIs. Of these, 48 (37%) of the respondents who described positive CIs were identified as Net Gens as were 30 (44%) of those who described negative CIs.

VRS User Positive Critical Incident

The Net Gen users' CIs coded as content-related identified factors that lead to perceptions of successful chat interactions.75% (36) of users provided successful accounts in which they obtained accurate answers or information, received quick assistance, and were assisted with locating specific resources. The following quote underscores several of the primary content features that contributed to a positive VR interactions, "The question was about a short story, and dealt with a specific character and their traits. I felt the encounter was successful because she quickly and successfully answered my question, and actually helped me with understanding other parts of the story as well" (UOS-40461). The convenience of the service contributed to users' successful encounters with VRS. Twenty-nine percent (14) of the user's CIs were coded to reflect convenience as a critical factor to the success of the interaction.

Although the content or receipt of desired information played a principal role in the successful CIs, relational facilitators also factored into many of the successful critical incidents. Users cited a positive librarian attitude and the quality of the relationship with the librarian as factors contributing to successful critical incidents. One respondent wrote, "I needed sources for a paper on Newlywed communication. The librarian was above and beyond helpful in finding a specific reference" (UOS-98115). Another quote illustrates how a librarian contributed to developing a relationship with the user while answering a query. The respondent wrote, "The librarian was able to guide me through a research problem clearly and thoroughly, assisting me step-by-step. The librarian helped me step-by-step, instead of rushing me through, she was able to work slowly with me" (UOS-25429). These CIs indicate that the information users receive is very important to them, but personal elements of the interaction also are important.

VRS User Negative Critical Incidents

More users provided accounts of positive CIs than negative ones. 77% (23) of VRS users' CIs were coded into content themes for factors associated with unsuccessful VRS encounters. Approximately 70% (21) of the users' CIs identified impediments to information delivery or retrieval or a librarian not answering their question as the reason for an unsuccessful VRS encounter. One quote illustrates one user's frustration with the VR interaction and not receiving the answer or information desired, "The librarian found the same results and webpages I found just by googling [sic] the item requested. The librarian basically accomplished what I had" (UOS-69642). Content themes were identified in both positive and negative critical incidents reported by the Net Gen as well as older adult respondents.

Fewer users identified relational aspects as the cause of unsuccessful encounters, with 20% (6) of the users' CIs highlighting relational elements as the crux of the unsuccessful interactions. Of the negative CIs that were coded into relational themes, the leading causes of unsuccessful encounters were poor relational quality and poor communication skills (of librarians). Another relational aspect that was highlighted was the VRS librarian's display of a negative attitude.

VRS Non-User Net Gen Critical Incidents

CIs also were collected from the VRS non-users.. Each participant was asked to write about two interactions with librarians, one positive and one negative, and explain why they thought the interactions fit these categories. The age difference between respondents also played a key role in the distinction between CI interactions.

VRS Non-User Positive Critical Incidents:

There were 154 positive CIs elicited from non-users. Of these, 108 (70%) were from Net Gens. Fifty percent (54) of CIs from this demographic group value a librarian who provides the needed information and associated positive CIs with librarians who assist with information delivery, answer questions, and locate specific resources. For example, one respondent mentioned "The

librarian was able to [direct me] to specific sites and find me books that were very helpful" (NOS-25719). The ability of the librarian to demonstrate knowledge and to provide instruction were other factors associated with positive CIs.

A large portion of the non-user Net Gen population's positive CIs were coded as having relational elements as important factors, with 36% (39) of CIs indicating that the librarians were supportive, helpful, and friendly when helping them, and were patient and persistent when undertaking their tasks. For example, one respondent gave the following rationale, "I like the one-on-one interaction, which enabled me to have my specific questions answered on the spot. The librarian was able to address my specific needs with practical, useful information. She was friendly and appeared genuinely glad to be helping me" (NOS-81566). Relationship quality and good communication skills also were identified as factors contributing to positive CIs and underscore the importance of the relational aspects of a reference interaction.

Overall, VRS non-users appeared to be most concerned about the content of the interactions (information/answers). However, the relational aspects of the interactions also contributed to positive CIs.

<u>VRS Non-User Negative Critical Incidents:</u>

There were 74 negative CIs elicited from Net Gen non-users, more than 75% of all non-user's negative CI responses. More negative CIs focused on content-related issues than on relational issues. One Net Gen user commented, "Well, a group of students and I had a big project to do on Shakespeare and we really needed the librarian to find reference information on our topic that was substantial. The project was due soon. The librarian could not find us adequate info so we did not get a really good grade" (NOS-58741). This user stated that the information required was of significant importance to him/her, and to their grade. Another quote highlights how waiting is associated with a negative interaction, "I needed help from a librarian over the phone and was put on hold for a long while. I was not in a rush, but I had a lot of stuff to get done and all I needed was one question answered about whether or not a book was in stock. I was transferred to many other people and put on hold until I finally was given to the right person, who then out [sic] me on hold again" (NOS-38269).

Ancillary reasons for negative CIs included relational barriers, such as a librarian's display of a negative attitude toward the task, as in seeming to be uninterested in the question. Other relational elements that had a detrimental impact on the librarian–user relationship were that the librarian pointed or did not come out from behind the desk, appeared to be busy, or did not commit time to the user's question. A quote from one Net Gen user addresses these issues, "One time, I had a simple question about when my book was due back to the library. The librarian had an attitude and took a while on the computer to answer my question. It seemed as if my question was unimportant to him. It was unsuccessful because he made me feel as if my question was unimportant. Even though he eventually answered, his condescending tone annoyed me" (NOS-29466). These comments indicate the value and importance users place on interpersonal aspects of librarian interactions.

Another unsuccessful CI highlights the importance of relational elements. Another Net Gen user wrote, "I had to find a book on reserve for a school project so I went to the circulation desk and communicated face-to-face with a librarian, in order to find what I was looking for. I was intimidated and the librarian was not too friendly. I just felt stupid and uncomfortable…if this situation had been done through email, I would have been less intimidated" (NOS-35996). This comment suggests that the format of the reference service, i.e., FtF or virtual, may significantly contribute to the relational comfort in the interaction. Poor relationship quality, poor communication skills, or lack of knowledge also lead to negative perceptions. For example, one Net Gen user wrote, "When I was face to face with a librarian they just really did not know the subject matter I was talking about to help me. They could not help me to achieve my goals" (NOS-41207).

Implications and Conclusion

The online survey data from users and non-users of VRS have identified several important aspects of the reference interaction that are important in both FtF and VRS. Convenience is the most important factor in deciding whether or not to use reference services, regardless of the respondent's age or the format of the reference service they choose. The Net Gen population associated convenience with 24/7 service availability, electronic resource accessibility, and multitasking capabilities. Whereas the convenience of the physical library was important to both older adult and Net Gen respondents, the younger cohort also considered the ability to find close parking to the library and accessibility to e-resources as important factors for convenience.

Another major factor in VRS use was knowledge of the service. The non-users indicated that they would be willing to try VRS if they knew it existed and if it were recommended by a trusted friend or teacher.[19] The Net Gen VRS users indicated that they valued interfacing with a librarian who is experienced and tech-savvy, and find VR interaction (especially email) less intimidating than FtF reference. They would like the VR technology to be faster and easier to use. The Net Gens mentioned that technology would be one reason why they may not use VR, especially if connections are slow and co-browsing does not work, whereas the older adults indicated that their own typing ability might hamper their VRS use.

The Net Gen preferred FtF reference over telephone or email reference services. Overall, the older adults preferred FtF reference interactions over other formats. Net Gen non-users appreciate a friendly and polite librarian, yet it was the older population that placed more value in developing a personal relationship with a specific librarian.

The Net Gen also indicated they were confident in their own ability to locate the information they needed, and would resort to librarian assistance only if they found they needed it. The non-users of VRS attributed their non-use to their concern about their knowledge of technology and their typing speed; whereas the Net Gen respondents indicated they might not use chat because they did not want to "bother" the librarian.

Academic reference librarians are faced with a complex and diverse population of library users, both in virtual and FtF formats who frequently have competing demands. Increasing numbers of distance learners as well as on campus students who choose to study from their dorm rooms or homes (undergraduates) other campus buildings or offices (graduate students and faculty) drive librarians to seek VR solutions that are workable and convenient. To users of both FtF reference and VR, common needs include extended hours of service and access to electronic information. Regardless of the preferences for FtF reference or VR, the library users prefer to interface with friendly librarians, and if possible, to develop relationships with them.

To meet the needs of the Net Gen students, academic librarians need to provide 24/7 reference services in an array of formats and to market these services to make people aware of their existence. These challenges are difficult in these times of severe staffing and budget constraints, but participation in consortia or networks that share the responsibility of VRS, holds promise for leveraging existing staff and finding ways to tap into the subject-specialist's knowledge that users highly value. One of the most difficult aspects of meeting Net Gen students' information-seeking needs is understanding their preferences and determining what is the best mix of FtF and virtual modes for a particular campus and user group. It is clear that our services are still highly valued, especially when students are in a time bind, and are working from home or dorm, and that they will spread the word when they have had a successful encounter.

As one Net Gen user said, "I was doing this project in the evening before the project is due, and I didn't have a lot of information. I asked them for information and...it was really successful because I ended up getting all the information I needed, and since she's a librarian she can

probably do a better job at getting resources. I would tell my friend: 'how about you go online, chat with a librarian, she'll be able to help you.'" (UTI-40)

These findings suggest that library users find interaction with librarians intimidating in the FtF reference environment, and, similar to decades of research in FtF settings, they believe VRS interactions may be annoying or bothersome to librarians. Based upon the analysis of positive and negative CIs of users and non-users, their major concern is getting the information they need, and a second major concern is to have a pleasant interaction with a librarian who is friendly, has a positive attitude, and is helpful. These particular facets of reference librarianship transcend age and technology and endure as attributes of interactions that are important to all types of users across all types of reference formats.

Notes

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[19] See also: Radford and Connaway, “Screenagers and Live Chat Reference."; Connaway et al., "Sense-making and Synchronicity."

Appendix A. User Survey

Introduction:

Thank you for agreeing to take this survey, which should take less than 45 minutes to complete. The survey contains ten sections; please answer all questions to the best of your ability, as most questions are required to complete the survey. When considering any questions having to do with Virtual Reference Services (VRS, i.e., chat reference), you should respond from your own experience with any and all live chat reference services.

1. Demographic Questions

Have you used chat reference services more than once? Yes No

If yes, roughly how often have you used chat reference? (2-3 times, 4-6 times, 1-2 times per month, 3-4 times per month, 5 or more times per month)

What is/are the name(s) of the chat reference services you have used? (QandANJ, Maryland AskUsNow! Ask Here PA, etc.)

Have you ever used the telephone for a reference question? Yes No

Have you ever used email for a reference question? Yes No

Have you ever used IM (instant messaging) or text messaging for a reference question? Yes No

What type of library do you most often use for in-person visits? (Academic library, Public library, Special library, School library, Other)

In what kind of setting is that library located? (Urban area, Suburban area, Rural area)

What is your gender? M F

What is your age? (12-14, 15-18, 19-28, 29-35, 36-45, 46-55, 56-65, 65+)

What is your ethnicity? (Native American, Asian or Pacific Islander, African American, Hispanic/Latino, Caucasian, Other)

What is the highest grade level or level of education that you have completed? 6th grade, 9th grade, 12th grade, some college, college degree, some graduate work, masters' degree, doctoral degree

2. Please compare your experiences with different modes of reference service, e.g. face-to-face (FtF), phone, e-mail, text messaging, and chat reference. [radio buttons for the formats following each case]

- The format of reference service that is most effective overall is:
- The format that is most efficient is:
- The format that is most reliable is:
- I can get the most accurate information in:
- It is easiest to communicate my question to a librarian in:
- I can develop the best relationship with a librarian in:
- I most enjoy using:
- I am least intimidated by:

3. Please compare the following *specific aspects* of your experiences with chat reference. [5-point scale in each case, Excellent, Very good, Good, Fair, Poor, N/A]

- The overall helpfulness of the service is:
- My interpersonal experience with the librarian is:
- This method of communicating with the librarian is:
- The amount of time I have to respond while chatting with the librarian is:
- The convenience of my access to reference help is:
- My chances of finding quick pieces of information are:
- My chances of finding specific resources are:
- My chances of finding online information are:
- My chances of a librarian being helpful are:
- My chances that a librarian will follow up on my questions are:
- The probability that I will use reference services again is:

4. When you have chosen to use chat reference instead of other reference formats (FtF, phone, email, and text messaging), how important have the following factors been in your decision? [Five-point scale, Very important, Important, Somewhat important, Of little importance, Unimportant, N/A.]

- Chat reference is a good starting point
- Chat reference is convenient
- Chat reference is free
- My experience in the past with chat reference was good
- Chat reference helps me find online resources
- Chat reference helps me use databases to find information
- Chat reference librarians keep trying to find answers
- Chat reference librarians are friendly and polite
- I can multi-task during the chat reference session
- After using chat reference, I receive a transcript of the answers
- The environment of chat reference is user-friendly
- Chat reference is just like talking to a person
- I can develop a personal relationship with the librarian
- Someone else recommended chat reference to me
- I needed reference help late at night or on the weekend
- I had a desperate need for quick answers
- I could not get to the library

5. When you have chosen to use other reference formats (FtF, phone, email, or text messaging) instead of chat reference, how important have the following factors been in your decision? [Five-point scale, Very important, Important, Somewhat important, Of little importance, Unimportant, N/A.]

- The library is convenient
- Other reference formats are more convenient
- I want to browse library sources
- I value being able to hold a book
- I need books or other materials from the library
- The librarian is very knowledgeable
- The librarian keeps trying to find answers
- The librarian offers me helpful feedback on my questions
- I can better judge if the librarian is being helpful
- The librarian is friendly and polite
- I can develop a personal relationship with the librarian
- The chat environment is cold and distant
- The chat scripted messages are too impersonal

- I can choose to ask questions of a specific librarian
- I can locate a librarian with specialized subject knowledge
- I have been frustrated with chat technology
- I have been frustrated with the chat environment

6. What specific features have been important to you in chat reference? [Very important, Important, Moderately important, Of little importance, Unimportant, N/A]

- Immediate answers
- Convenience
- Better resources
- Availability of subject specialists
- Follow-up with email after the session
- Helpful transcript after the session ends
- Ability to do other things while using chat reference
- Opportunity to make personal connections with librarians
- Anonymity (a layer of separation between the librarian and myself)
- Sense of greater connection to librarian
- Good opportunity for dialogue
- Elimination of geographic boundaries
- Less intimidating than going to reference desk
- Librarian's reactions are more clear
- Easier to express my thanks to a librarian

7. Please rate to what extent you agree with how the following items might *discourage* you from using chat reference. [Strongly agree, Agree, Disagree, Strongly disagree, N/A]

- System abruptly disconnects
- Slow internet connection
- Interference from pop-up blockers
- Interference from firewalls
- Platform incompatibility
- Difficulty viewing web pages with librarian
- Difficulty receiving web pages sent by the librarian
- Other software "bugs"
- Own mistakes using software
- Software mistakes made by the librarian
- Impatience with slow software
- Problems with typing speed or accuracy
- Accidental sending of messages too soon
- Lack of marketing from the library
- Slow response time
- Answers not helpful
- Librarian sent me to Web pages that are not correct
- Lack of training for librarians
- The environment is impersonal
- Chat reference librarians tend to interrupt the dialogue
- Chat reference librarians are too busy
- Chat reference librarians might only use Google
- Chat reference librarians might not be from the appropriate library
- Chat reference librarians might not be from the right geographic area
- Chat reference librarians might not be experts in my subject area

8. Please rate the following in terms of how significant an *improvement* they could make to your experience of chat reference services. [Very important, Important, Somewhat important, Of little importance, Unimportant, N/A]

- More stable software
- More flexible software
- Software interface that can be personalized
- Faster software
- Easier software
- Availability of tutorials
- More reliable co-browsing
- Across-the-board compatibility with my web browser
- Availability in other languages
- Addition of streaming audio
- Addition of VOIP (Voice-Over Internet Protocol, for verbal transactions)
- Addition of translation packages
- Better use of color and organization of website
- Better links to the service
- Broadband Internet access instead of dialup
- Better satellite access to Internet and chat
- Better capabilities for people with disabilities
- More marketing of the service
- Bookmarks/ links to the service from more sites
- Availability on cell phones and handheld devices
- More hours of service
- More experienced chat reference librarians
- Younger and more tech-savvy chat reference librarians
- More chat reference librarians
- Concierge-type service at a kiosk offering assistance using the library technology
- Cyber cafes on campus with information and instructional services
- Centralized information commons areas with information and instructional services

9. Specific Reference Situations

Please think about one experience using chat reference services in which you felt you *achieved a positive result*.

- Please describe the circumstances and nature of your question.
- Describe why you felt the encounter was successful.
- Did the chat format help your experience to be successful? If yes, how?

Please think about one experience using chat reference services in which you felt you did *not* achieve a positive result.

- Please describe the circumstances and nature of your question.
- Describe why you felt the encounter was not successful.
- Did the chat format contribute to your lack of success? If yes, how?

10. Additional comments

Would you recommend chat reference services to someone else? Why or why not?

Please add any additional comments here.

If you have completed all the questions for this survey, please enter your required survey code here and then click "Submit Your Responses" (ONCE ONLY).

Appendix B. Non-user Survey

Introduction:

Thank you for agreeing to take this survey, which should take less than 45 minutes to complete. The survey contains seven sections; please answer all questions to the best of your ability, as most questions are required to complete the survey. When considering any questions having to do with reference services, your responses should reflect your own experience with any library reference service.

1. Demographic Questions

Have you ever used virtual reference services or instant messaging with a librarian? Yes No

Have you ever used the telephone for a library reference question? Yes No

Have you ever emailed a librarian with a reference question? Yes No

What type of library do you most often use for in-person visits? (check one: academic library, public library, special library, school library, other, N/A)

In what kind of setting is that library located? (Urban area Suburban area Rural area)

What is your gender? M F

What is your age? (12-14, 15-18, 19-28, 29-35, 36-45, 46-55, 56-65, 65+)

What is your ethnicity? (Native American, Asian or Pacific Islander, African American, Hispanic/Latino, Caucasian, Other)

What is the highest grade level or level of education that you have completed? (6th grade, 9th grade, 12th grade, some college, college degree, some graduate work, masters' degree, doctoral degree)

2. Please compare your experiences with different modes of reference service, e.g. face-to-face (FtF), phone, email, and text messaging. Please select one response per question. [radio buttons for the formats following each case]

- The format of reference service that is most effective overall is:
- The format that is most efficient is:
- The format that is most reliable is:
- I can get the most accurate information in:
- It is easiest to communicate my question to a librarian in:
- I can develop the best relationship with a librarian in:
- I most enjoy using:
- I am *least* intimidated by:

3. Please rate the following *specific aspects* of your experiences with face-to-face reference services. [5-point scale in each case, Excellent, Very Good, Good, Fair, Poor, N/A]

- The overall helpfulness of the service is:
- My interpersonal experience with the librarian is:
- This method of communicating with the librarian is:
- My sense of time pressure while asking questions is:
- The convenience of my access to reference help is:
- My chances of finding quick pieces of information are:
- My chances of finding specific resources are:

- My chances of finding online information are:
- My chances of a librarian being helpful are:
- My chances that a librarian will follow up on my questions are:
- The probability that I will use reference services again is:

4. What is your preferred format for assistance from a librarian (face-to-face, telephone, electronic) and why?

Please select one of the following, and answer the questions in the appropriate section.
I prefer getting assistance from a librarian face-to-face (Complete only section A)
I prefer to use the phone (Click here to skip to section B)
I prefer electronic formats (Click here to skip to section C)

A. What specific features are important to you about the experience of working with a librarian in person? [Very important, Important, Moderately important, Of little importance, Unimportant, N/A]

- The library is convenient
- The librarian is very knowledgeable
- The librarian keeps trying to find answers
- The librarian is friendly and polite
- I trust the information sources that my librarian recommends
- The librarian offers me helpful feedback on my questions
- I can learn new research techniques by interacting with the librarian
- I can choose to ask questions of a specific librarian
- I can locate a librarian with specialized subject knowledge
- I can develop a personal relationship with the librarian
- I trust the librarian at my library
- The librarian has helped me before
- If the librarian is busy, I can wait
- I want to browse library sources
- I value being able to hold a book
- I need primary sources from the library

If you have answered section A, please skip sections B and C, and continue with Question 5.

B. What specific features are important to you about telephone reference services? [Very important, Important, Moderately important, Of little importance, Unimportant, N/A]

- The telephone is convenient
- The librarian will keep trying to find answers
- The librarian is friendly and polite
- I can phone and request a specific librarian
- I can locate a librarian with specialized subject knowledge
- If the librarian is busy, I can call back later
- The librarian has helped me before in person
- The librarian has helped me before on the phone

Please rate to what extent you agree with how the following reasons might *discourage* you from going to the library in person. [Strongly agree, Agree, Disagree, Strongly disagree, N/A]

- The library building is not convenient
- The library is not open at convenient hours
- There is a lack of parking close to the library
- The library atmosphere is too distracting to work
- The library reference desk is intimidating
- I have been embarrassed when asking for help at a library
- The librarian is not particularly helpful
- The librarian does not have enough specialized subject knowledge

- The librarian may only do a quick search for some websites
- The librarian tends to be too busy
- The librarian makes me feel stupid when I ask a question
- I may not be able to find the right librarian who can help

If you have answered section B, please skip question C, and proceed to question 5.

C. What specific features are important to you about the experience of using electronic formats (email or text messaging) to contact a librarian? [Very important, Important, Moderately important, Of little importance, Unimportant, N/A]

- Electronic formats are convenient
- Electronic formats are fast
- Electronic formats are informal
- I can use electronic formats at night or on weekends
- I can use electronic formats while working from home
- The librarian will keep trying to find answers
- The librarian will follow-up with me later
- The librarian is friendly and polite
- I can email or text message a specific librarian
- I can email or text message a librarian with specialized subject knowledge
- When I use email or text messaging I can strengthen a personal relationship with a librarian
- If the librarian is too busy, I can wait for a response
- The specific librarian has helped me before in person
- The specific librarian has helped me before electronically
- I don't mind waiting to get a response from a librarian, even if it takes a day or two

Please rate to what extent you agree with how the following reasons might *discourage* you from going to the library in person. [Strongly agree, Agree, Disagree, Strongly disagree, N/A]

- The library building is not convenient
- The library is not open at convenient hours
- There is a lack of parking close to the library
- The library atmosphere is not conducive to work
- The library reference desk is intimidating
- I have been embarrassed when asking for help at a library
- The librarian is not particularly helpful
- The librarian does not have enough specialized subject knowledge
- The librarian may only do a quick search for some websites anyway
- The librarian tends to be too busy
- The librarian makes me feel stupid when I ask for help
- I may not be able to find the right librarian who can help

5. Please rate the following factors in terms of their impact on why you have not used chat reference services (VRS). [Strongly agree, Agree, Neutral, Disagree, Strongly disagree, N/A]

Access to chat reference

- I do not know what chat reference is
- I have no access to chat software
- I did not know chat reference service was available to me
- Chat reference service fees might cost too much
- Chat reference may not be offered at the times I would need the service

Technology issues

- I am uncomfortable trying chat software
- My internet connection is too slow

- My own level of computer literacy is too low
- I think it might take too much time to type out the questions accurately
- It might be difficult to frame questions in chat environment
- I don't think I could use equations in chat reference
- I don't think I could use visual images or sound files in chat reference
- Chat reference might be too complicated
- It might be difficult to express myself in chat environment
- It might be difficult to type that quickly

Other concerns

- I would not trust answers from a chat service
- I am afraid of chatting with a stranger
- I can get all the information I need from other sources
- My chat reference questions might annoy a librarian
- My chat reference questions might overwhelm a librarian
- My chat reference questions might get me a negative response
- I might not get adequate feedback from the librarian
- The librarian might not be able to help me via chat
- I do not know to whom I would be speaking
- I don't think I could locate the specific librarian I prefer
- I don't think I could locate a librarian with specific subject expertise
- I don't think I could connect to a pleasant librarian
- I'm never really satisfied by any library reference services
- I'm concerned that chat conversations could be saved and shown to others without my permission
- I'm concerned that hackers might enter my chat conversation
- I'm concerned that chat service might connect me to an internet predator

6. Specific Reference Situations

Please think about one experience in which you felt you achieved a *positive result* after seeking library reference services in any format.

- Please describe the circumstances and nature of your question.
- Describe why you felt the encounter was successful.
- Did the format (face-to-face, telephone, email, or text messaging) help your experience to be successful? If yes, how?

Please think about one experience in which you felt you did *not* achieve a positive result from reference services.

- Please describe the circumstances and nature of your question.
- Describe why you felt the encounter was not successful.
- Did the format (face-to-face, telephone, email, or text messaging) contribute to your lack of success? If yes, how?

7. Additional comments:

What might convince you to try chat reference services? Why?

Please add any additional comments here.

If you have completed all the questions for this survey, please enter your required survey code here and then click "Submit Your Responses" (ONCE) so that we may begin to process payment for you.

Table 1 VRS User respondent demographics

Gender	
Female	85
Male	52

Table 2 VRS User respondent demographics

Ethnicity	
Caucasian	107
Asian or Pacific Islander	11
African American	11
Other	5
Hispanic/Latino	3
Native American	0

Table 3 VRS User respondent demographics

Age	
12-14	7
15-18	19
19-28	23
29-35	18
36-45	33
46-55	21
56-65	12
65+	4

Table 4 VRS Non-User respondent demographics

Gender	
Female	125
Male	59

Table 5 VRS Non-User respondent demographics

Ethnicity	
Caucasian	131
Asian or Pacific Islander	30
African American	10
Other	7
Hispanic/Latino	4
No Response	2

Table 6 VRS Non-User respondent demographics

Age	
12-14	18
15-18	42
19-28	62
29-35	11
36-45	18
46-55	19
56-65	10
65+	4