Chapter 2

User Perceptions and Virtual Reference Services

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As academic librarians embrace the Internet as an appropriate medium for information exchange, communication, and instruction, college and university students are also becoming more familiar and comfortable with emerging technologies, including both synchronous and asynchronous tools. Acceptance of Web-based products that provide speed, convenience, and anonymity cannot, however, be assumed, especially in a non-recreational context. Based on survey and interview responses, this paper discusses actual usage patterns and behaviors, what users in an academic setting expected to receive from an Ask a Librarian service, and the implications these findings might have on future virtual reference projects.

INTRODUCTION

Many technologists believe that advantageous innovations will sell themselves, that the obvious benefits of a new idea will be widely realized by potential adopters, and that the innovation will diffuse rapidly. Seldom is this the case.

Rogers, Diffusion of Innovations (2003)
The rapid inclusion of the Internet into daily life is a well-documented case study in technology diffusion. As more people have gone online, the development of Web-based products and services has also expanded to both meet and drive Internet-user expectations. While growing familiarity with all types of information technology theoretically increases the likelihood of more frequent use of other similar or more advanced technologies, it can also be said that the Internet is “a complex landscape of applications and purposes, and users” (Wellman and Haythornthwaite, 2002, 10) in which adoption of technological innovations cannot be predicted. For every “killer” application that because of its design and usefulness becomes indispensable to millions, there are many applications that, despite potential benefits to users, generate little interest. Understanding the reasons why new and available information applications are accepted or rejected may well turn out to be one of the major research questions to emerge from the digital revolution (Henderson and Divett, 2003).

**Background**

“Near synchronous” UNIX text-message systems have been in existence for more than 20 years (Grinter and Palen, 2002). Web-based, feature-rich synchronous communication applications, however, are relative newcomers to the online world. Early adopters of these new graphical and interactive tools included teenagers and young adults, who quickly took up instant messaging (IM) and chat features that the technology allowed (Lenhart, Lee, and Lewis, 2001; Jones, 2002). Recreational chat for this group is one of the Internet’s killer applications, with nearly 2 billion instant messages sent on a daily basis (Edwards, 2003).

Many libraries are also taking advantage of synchronous tools that allow for online, real-time and interactive chat with users, and which also may include graphical co-browsing or “follow-me” features. For these libraries, the primary rationale for investing in commercial digital reference software is the desire to communicate with and support an ever-growing num-
ber of remote users who, by choice or necessity, access library resources and services via the Internet (Cooper et al., 1998). Despite the popularity of tools that allow chat, a recent declaration that “virtual reference in libraries is here to stay” (Helfer, 2003, 63) and the success of many e-reference initiatives (Tenopir and Ennis, 2002), it remains unclear whether library users expect, or will use, online help delivered by a library Web site. Librarians investing the time and money to establish digital Ask a Librarian services that respond to perceived user needs are often surprised by low initial traffic and the lack of repeat customers. Within this context, the authors examined a pilot virtual reference service project, looking for explanations of usage patterns and attitudes.

Washington State University is a multicampus, land grant university system, located in the Pacific Northwest. The main campus of the university, located in the southeast corner of the state in Pullman, Washington, serves approximately 16,000 undergraduate, graduate, doctoral, and professional students in a residential and rural environment. The Vancouver campus, situated in an urban setting near Portland, Oregon, serves an older adult, commuter population of 2,000 upper-division and graduate students. Synchronous-based virtual reference was implemented as a pilot project on both the Pullman and Vancouver campuses in the fall of 2002. During the course of the 2002–2003 academic year, a total of 141 nontest reference transactions were recorded, with only 15 return customers appearing in the activity logs of the software. While acknowledging the importance of marketing and promotion, scheduling, and instruction, librarians involved in the project felt that other variables, such as user demographics, attitudes, and perceptions, were also at work and may have significantly influenced actual use of the service. The research study reported here was grounded in the desire to understand the apparent gap between expected and actual outcomes for virtual reference. The authors also hoped to find indicators that might explain adoption patterns for virtual reference services by looking at perceptions about an existing interactive technology: synchronous communication, or chat.


Literature Review

The explosive growth of the Internet has generated an expanding body of research concerned with characteristics and effects of computer-mediated technologies in all disciplines. Given the high cost of under-utilization or non-use of technological innovations in the workplace, it is not surprising that theoretical models clustering around technology acceptance are fairly common in the literature (Ehrlich, 1987; Morris and Turner, 2001; Yi and Hwang, 2003). There are several studies that look at technology diffusion in general (Rogers, 2003) and adoption of instant messaging and online chat in particular (Grinter and Palen, 2002; Nardi, Whittaker, and Bradner, 2000; Herbsleb et al., 2002). As more organizations add synchronous tools to the suite of communication applications available to employees and customers alike, this area of research is expected to grow.

Librarians have a long tradition of providing user-centered services. The library literature is not lacking in examples of user needs and expectations assessment studies of traditional library services (Millson-Martula and Menon, 1995; Edwards and Browne, 1995). A great deal of current library literature also focuses on e-reference services in all types of libraries (Janes, 2002; Pomerantz et al., 2004; Francoeur, 2001), although much of this work is of a practical nature and does not look at the social psychology issues affecting perceptions of these services or applications. White (2001) and Gray (2000) have begun to research the diffusion of virtual reference service in academic libraries, and Penka (2003) has looked at the establishment of a research agenda for virtual reference. It is hoped that further investigation into the use, usefulness, and usability of digital reference will continue.

This study measured chat usage in a university population in an attempt to determine if perceptions of chat may have affected user behavior in terms of interest and trial use of virtual reference services.

METHODS

To reach a better understanding of synchronous-based virtual reference usage patterns and to determine the role and salience
of virtual reference in an academic setting, the authors looked specifically at synchronous communication (or online chat). Two separate anonymous surveys and an informal usability study were designed. Usability-study interviews provided anecdotal evidence only and were not included in the quantitative data analysis.

A first survey (“Chat Survey”) asked seven attitudinal questions pertaining to chat use in general, not limited to library chat service (see Appendix A at the end of this chapter). Participants were asked to designate their institutional status at Washington State University (i.e., undergraduate, graduate, faculty, staff, or other) and then respond to questions about frequency, purposes, and important aspects of their chat use. Participants who self-reported non-use of chat were given the opportunity to choose reasons why chat was not used. The final question asked whether the participant knew anything about Ask a Librarian services. This survey was distributed at several back-to-school events on the Washington State University (WSU) Pullman campus in the fall of 2003. The Chat Survey was also distributed on the WSU Vancouver campus and was made available at the library reference desk. A total of 178 surveys were completed, 113 from the Pullman campus, and 65 from the Vancouver campus.

A second survey (“Virtual Reference Survey”) was distributed by e-mail to 62 patrons who used the Pullman Ask a Librarian service between August 2002 and October 2003. Patron e-mail addresses were collected from transaction logs available within the software. The number of responses to this survey was 18, a return rate of 29%.

Questions in the Virtual Reference Survey were reworded slightly but, as in the first survey, pertained to frequency and reasons for chat use or non-use (see Appendix B at the end of this chapter). This survey also asked participants where they had heard about the WSU Ask a Librarian service, if they had received the information they needed when using the service, and if they expected to chat with a real person or receive an automated response to their questions. Participants were asked if they were satisfied with the service they received, if it was helpful to follow a librarian through resources, and if the virtual ref-
The virtual reference experience was more or less helpful than an in-person library-instruction session.

The third method used for data collection involved small and informal usability studies conducted on both campuses. Participants were asked to use the WSU Ask a Librarian service, complete the “Ask a Librarian Virtual Reference Survey,” and take part in a short exit interview with one of the authors regarding their recent experiences with the virtual reference service. Participants were given the option of using individual research questions or choosing from a list of three hypothetical research scenarios. On the Pullman campus, participants were recruited from library-instruction classes, student groups across campus, and by signs placed around the library on the two nights that the usability study was conducted. In Vancouver, volunteers were solicited at the reference desk. Participants on both campuses received small incentives in return for involvement in the study. Exit-interview questions asked what the patron expected to receive from the Ask a Librarian service, if the service met those expectations, if the patron had any notion of whether answers were human or machine generated, and opinions on chat in general.

Ten students on the Pullman campus and two on the Vancouver campus completed activity scenarios and the virtual reference surveys. While several exit interviews were completed during this process on both campuses, the findings were mostly used for anecdotal evidence of attitudes towards virtual reference services and chatting in general.

**RESULTS**

The authors originally hypothesized that the reportedly widespread use of both synchronous communication and asynchronous tools (i.e., chat and e-mail) had already created a critical mass of users comfortable with these technologies. It was assumed that this familiarity would trigger expectations and use of similar or more advanced applications. Based on the array of potential items that might affect perception of virtual reference and to test the theories of diffusion and technology accep-
Chat Survey

There was a total of 178 respondents to the general Chat Survey from the two campuses (Table 2-1).

The sample included 10 faculty, 11 university staff, 63 graduate or professional student, 87 undergraduates, and 7 individuals choosing “other” as an institutional status. In terms of status, 32 (51%) of the graduate and professional students described themselves as chat users, and 55 (63%) of undergraduates reported using synchronous communication applications or tools. Three faculty, one staff member, and three of the “others” indicated chat usage, for a 25% use rate.

From a list of multiple categories, survey participants were asked to indicate purposes of their chat use. In response, 89 reported personal use, 24 used chat for school-related purposes, and eight marked work-related activities. The majority of respondents (93%) indicated that they used chat for recreational purposes. Survey participants who used chat were also asked how frequently they did so. There were 87 (78%) who responded to this question, and of these, 67 said they used chat at a minimum of a couple of times per week.

A question concerning the “likeability” of chat proved problematic. An error in wording resulted in respondents on the Pullman campus checking the choices that applied to them rather than ranking the seven choices on a scale of 1 to 7. In addition, 12 survey participants in Vancouver also checked rather

<table>
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<tr>
<th></th>
<th>Both campuses</th>
<th>Pullman campus</th>
<th>Vancouver campus</th>
</tr>
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<tbody>
<tr>
<td>Total Response</td>
<td>178</td>
<td>113</td>
<td>65</td>
</tr>
<tr>
<td>Chat Users</td>
<td>96 (54%)</td>
<td>68 (60%)</td>
<td>28 (43%)</td>
</tr>
<tr>
<td>Nonusers of Chat</td>
<td>82 (46%)</td>
<td>45 (40%)</td>
<td>37 (57%)</td>
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</table>
than ranked their responses to this question. A total of 79 respondents indicated applicable choices instead of ranking the responses. Responses from both ranked and unranked responses are examined in Table 2-2. The average rank in Table 2-2 is an arithmetical mean of all ordered responses for the category rounded to one decimal place. An additional problem with this question was that nonusers responded to the question by either checking or ranking reasons for chat use.

Eighty people provided answers to reasons why they did not use chat (see Table 2-3). Respondents were able to choose multiple reasons for nonuse. Six respondents reported both that they felt chat was a waste of time and that they were not interested in chat, while 39 individuals only listed one of these reasons for nonuse. With the majority of nonusers of chat indicating a negative attitude toward synchronous communication tools, it suggests that this type of tool would have low interest or trial priority. Nonetheless, when considering that nearly 60% of self-reported chat users indicated they used the technology because it was easy, the individuals in this category may still be potential virtual reference users.

To the question Would you ever think of using chat to get help with research, homework, technical support, etc.? 132 (74%) replied they would, 39 answered no, and 7 left the question blank. Thus,
61% (50 out of 82) nonusers indicated they would use chat under the circumstances listed in the question.

In asking *Have you ever heard of an Ask a Librarian chat service?* the authors wanted to assess how well known this type of service is within academic populations. While 26 survey participants (17%) indicated they had heard of such a service, 123 participants (83%) indicated they had not.

**Virtual Reference Survey**

The Virtual Reference Survey was originally sent by e-mail to 62 individuals affiliated with the Pullman campus who had used the WSU Ask a Librarian service between August 2002 and October 2003. Eighteen people responded to this survey, a response rate of 29%. In addition, we administered the survey to a group of 12 students who were recruited to fill out the questionnaire and to take part in exit interviews. Although informative to the authors, the small sample size makes the results of the Virtual Reference Survey difficult to generalize beyond the local community.

The first question attempted to determine how prevalent

<table>
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<tr>
<th>Reason for not using chat</th>
<th>Number of responses</th>
<th>Percentage of total respondents giving reason</th>
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<tbody>
<tr>
<td>E-mail is better than chat</td>
<td>39</td>
<td>49%</td>
</tr>
<tr>
<td>Not interested in chat</td>
<td>23</td>
<td>29%</td>
</tr>
<tr>
<td>Chat is a waste of time</td>
<td>22</td>
<td>28%</td>
</tr>
<tr>
<td>The telephone is better than chat</td>
<td>15</td>
<td>19%</td>
</tr>
<tr>
<td>Other</td>
<td>13</td>
<td>16%</td>
</tr>
<tr>
<td>Don’t know how to use chat</td>
<td>9</td>
<td>11%</td>
</tr>
<tr>
<td>Do not know what chat is</td>
<td>5</td>
<td>6%</td>
</tr>
<tr>
<td>Chat is too difficult to use</td>
<td>2</td>
<td>3%</td>
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THE VIRTUAL REFERENCE EXPERIENCE

Chat usage was among previous users of the Ask a Librarian service. Respondents were asked to answer on a scale of one to five, with one signifying I have never used a chat program and five meaning I chat more than five hours per week on average (see Table 2-4).

Given the low amount of virtual reference traffic during the first year of service and the modest marketing efforts that went into promoting it, the authors included a question on this survey asking how users found out about the service. Of the 18 former users of the WSU Libraries Virtual Reference Service, 13 (72%) indicated that they found out about the service through the Libraries’ Web site.

All 30 (100%) of the respondents indicated they did receive the information needed. The survey participants were asked about expectations for virtual reference services: 24 individuals indicated that they had expected to communicate with a human, while only 6 reported that they had expected to receive automated answers to their questions. This survey also attempted to discover how the WSU Libraries virtual reference service compared with other similar services. Participants were asked How did your experience with Ask a Librarian compare with other chat or “ask-a-question” services? Of the 28 responses to this question, only 16 attempted to make a comparison with other similar services. The responses that attempted to make comparisons suggest that participants did not have experience with any

<table>
<thead>
<tr>
<th>Familiarity with chat</th>
<th>Number of respondents</th>
<th>Percentage of respondents</th>
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<tr>
<td>I have never used a chat program (1)</td>
<td>3</td>
<td>10%</td>
</tr>
<tr>
<td>2</td>
<td>13</td>
<td>43%</td>
</tr>
<tr>
<td>3</td>
<td>5</td>
<td>17%</td>
</tr>
<tr>
<td>4</td>
<td>3</td>
<td>10%</td>
</tr>
<tr>
<td>I chat more than five hours per week on average (5)</td>
<td>6</td>
<td>20%</td>
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</table>
type of online synchronous reference service, although a few people did try to make a comparison with e-mail reference.

The survey participants were asked Were you satisfied with the assistance you received compared to other services you have received via the Internet? Nearly all respondents appear to have interpreted this question as Were you satisfied with the assistance you received? and did not attempt to make any comparisons, although they did respond both positively and negatively about the assistance received.

Participants were also asked Was it helpful to have a librarian guide you through library databases, the catalog, other Web sites, etc.? Twenty-three respondents reported in their comments that it was helpful, while five others claimed that the question did not apply to their reference transaction.

To the question Was using this service more helpful than attending a library instruction session or visiting the reference desk in person? 12 respondents indicated that it was and 12 others indicated that it was not. Five individuals gave mixed or non-committal replies. Ten respondents to this question made comments citing the convenience of the WSU Librarian Virtual Reference Service. Participants were asked to rate the frequency with which they expected to use the WSU Libraries Virtual Reference Service in the future on a scale of one to five, with value one described on the questionnaire as Never and value five described as Several times a term (see Table 2-5).

The survey participants were asked to suggest improvements for the WSU Libraries Virtual Reference Service. The most prevalent response concerned increasing the speed of the con-
nection, indicating a possible problem with the graphical interface and co-browsing functions of the digital reference software used.

**DISCUSSION**

The findings should not be generalized because the sample size was so small and factors regarding individual differences—such as overall experience with the Internet, other information technologies, and library services—were excluded. Further, specific characteristics of the Ask a Librarian product and service, such as its ease of use and usefulness, were left out of survey questions. Although the findings may be consistent across user groups of varying experience levels, to gain a better understanding of users’ perceptions and attitudes about virtual reference products and services, future research should include these applicable factors. Finally, the behaviors in our study are self-reported rather than observed. Although these measures are widely used and are easy to administer, there may be problems with accuracy and bias.

Despite these shortcomings, the findings do provide some interesting insights into the study of college students’ Internet habits. It was evident from this study that chat usage is a local phenomenon and highly variable. Based on the data gathered, older college students, as represented by Vancouver campus survey respondents, appear to be satisfied with asynchronous means of communicating, for example, and as a result may not expect or be ready to adopt synchronous tools that provide reference assistance. At the same time, younger students, as represented by those on the Pullman campus, may have a higher expectation that an online help service will be available. It remains to be seen if teenagers, as the heaviest users of chat services, will have even higher expectations for real-time online help when they enter the college environment. While a popular method of communication, chat is by no means the only one by which students might interact remotely with a library system. Chat usage, therefore, should not be seen as the only predictor for use or non-use of virtual reference service at Washington State University.
This preliminary research suggests a number of questions for future investigation. Are potential e-reference users likely to be drawn from the general population of chat users or non-users of chat, or is prior chat experience an irrelevant factor in predicting who will or will not use virtual reference services? It would appear from this research that within the academic environment, current users and non-users of chat are both reasonably, although not predictably, likely to employ virtual reference services. Similarly, frequency of chat usage does not appear to be a determining factor in future virtual reference use. Another area to explore is whether the prevalence of chat usage for personal or recreational purposes leads to a perception, in the academic community at least, that synchronous communication is frivolous or a waste of time, and, therefore, not entirely appropriate for scholarly or professional activity, thus making adoption unlikely.

Further research and controlled data-gathering studies are needed to investigate how perceptual variables relate to e-reference usage, usefulness, and usability. The conclusions suggest that librarians must continue analyzing the expectations and needs for these services.

REFERENCES


APPENDIX A

WSU Libraries Chat Survey Questions—Fall 2003

The WSU Libraries want to test the effectiveness of our services. The purpose of this survey is to learn if and how people use online chat and if the Libraries’ chat reference service might be useful to the campus community. To do this we are conducting a study to discover how people use online chat.

1. How would you classify your status at WSU?
   a. Undergraduate student
   b. Graduate student
   c. Post-doctoral student
   d. WSU Staff
   e. WSU Faculty
   f. Other—please explain

2. Do you use online chat, such as AOL Instant Messenger, Yahoo Chat, or MSN Chat?
   a. Yes
   b. No (if no, skip to Question #4)
      If Yes, how often do you use online chat?
      a. Several times a day
      b. Once a day
      c. A couple of times a week
      d. Very infrequently

3. Why do you use chat (check all that apply)
   a. For school purposes (part of an assignment, get help, etc.)
   b. For work purposes (chat with co-workers, fulfill projects, etc.)
   c. For personal use (have fun, chat with friends, etc.)
   d. Other (explain)

4. In your opinion, what are the most important aspects of online chat? Please rank the following options by typing
a number (1 through 7) in the box next to each option with “1” being most important and “7” being least important.

a. It is free  
b. It is fast  
c. It is anonymous  
d. I can be anywhere  
e. It is fun  
f. It is easy  
g. Other (explain)

5. If you have never used chat services, what are some reasons why you have not used it?

a. I do not know what chat is  
b. I am not interested in chat  
c. I do not know how to use chat  
d. It is difficult to use  
e. Chat is a waste of time  
f. The phone is a better way to communicate  
g. Email works just fine for me  
h. Other (explain)

6. Would you ever think of using chat to get help with research, homework, technical support, etc.?

a. Yes  
b. No

7. Have you ever heard of an Ask a Librarian chat service?

a. Yes  
b. No

Thank you for your time!
APPENDIX B

Ask a Librarian (Virtual Reference)
Survey Questions—Fall 2003

1. On a scale of 1 to 5 (with 1 being “I have never used a chat program” and 5 being “I chat more than 5 hours per week on average”), how familiar are you with Internet-based chat programs, such as ICG, AOL Instant Messenger, Yahoo Chat, or others?

2. If you have never used a chat program, please select the most likely reason for not using one:
   a. I have never heard of chat programs.
   b. I have heard of chat programs, but do not know how to use them.
   c. My Internet connection is too slow.
   d. I have never had a reason to use a chat program.
   e. Chat programs are a waste of time.

3. If you frequently use chat programs, please select the most likely reason for using them:
   a. Leisure/Entertainment
   b. Getting my questions answered
   c. Doing research
   d. As a communication tool
   e. Getting technical support
   f. Other (please describe)

4. If you are an infrequent user of chat services, select the most likely reason for not using these services more:
   a. Slow Internet connection or other technical problems
   b. Easier to use the phone
   c. Dissatisfied with service as it was presented
   d. I don’t have enough time to use
   e. I didn’t get the answer/service/support I expected

5. How did you find out about the Ask a Librarian service? (Check all that apply):
a. Read about it in the student newspaper
b. Noticed a link to it on the library Web site
c. Heard about it in a class
d. Saw it on a bookmark or other handout
e. Other (please describe)

6. When you used the Ask a Librarian chat reference service, did you receive the information you needed?
   a. Yes
   b. No

7. Choose one of the following options based on when you used the Ask a Librarian service:
   a. I expected to chat with a real person
   b. I expected to receive an automated answer

8. How did your experience with Ask a Librarian compare with other chat or “ask-a-question” services?

9. Were you satisfied with the assistance you received compared to other services you have received via the Internet?

10. Was it helpful to have a librarian guide you through library databases, the catalog, other Web sites, etc.?

11. Was using the service more helpful than attending a library instruction session or visiting the reference desk in person?

12. On a scale of 1 to 5, with 1 being never and 5 being several times a term, how often do you think you might use an Ask a Librarian service?

13. What would you like to see improved about library chat services? About chat services in general?

Submit your Survey.
Thank you for your time!