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Instruction via Chat: Does Co-Browse Help?

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Title: Instruction via chat reference: Does co-browse help?

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Abstract:

Purpose: The purpose of this research is to determine whether instruction would be welcomed by Instant Messaging (IM)/chat users, whether instruction is possible in this medium, whether it can be effectively provided, and if the use of co-browsing enhances learning.

Methodology: Two studies were conducted in which IM/chat reference transcripts were analyzed and patron surveys collected. This research paper compares results from these studies, the first based on use of text-only IM software, the second using commercial chat software with a co-browse feature.

Findings: Findings indicate that patrons welcome instruction, whether they ask for it or not, and are satisfied with chat/IM as an instructional medium. Librarians usually provide instruction, though they are more likely to do so if patrons ask for it, directly or indirectly. Co-browsing was used little and did not increase the amount of instruction provided. Patron question format had an impact on the likelihood of co-browsing. Despite a high rate of technical difficulties, co-browsing was very well received by survey respondents.

Practical implications: Findings suggest more training on the importance of instruction in virtual reference is needed.

Originality/value: Providing instruction via reference is an established practice at the physical reference desk, yet few studies of instruction in virtual reference have been conducted and none on co-browsing as an instructional tool. This study addresses the

need for research on instruction in the virtual reference environment.

Keywords: Reference, Instruction, Chat, Instant Messaging, Virtual Reference, Co-Browse

Article Type: Research paper

Instruction via chat reference: Does co-browse help?

Introduction

Virtual reference extends the reach of reference librarians to remote patrons. First offered via email, now widely offered through chat and/or instant messaging (IM) services, virtual reference is designed to provide reference service to those who cannot or prefer not to come to the physical reference desk. Co-browsing, the ability of both librarian and patron to view and manipulate the same Internet screen in a window attached to the chat window, is a much touted feature of commercial virtual reference software. It is advertised as a means of providing instruction and hands-on experience. It is a fairly new tool, however, so little is known about the effect of co-browsing on the reference experience. Does it live up to the promise of providing instruction and hands-on experience? Do students want co-browsing and do they think it is a good way to learn? Is it being used to its full capacity? This study explores these questions, comparing an IM reference service with a chat service that offers co-browse capability.

The growth of distance learning, electronic resources, and instant messaging converged to make live virtual reference the obvious choice for the next new service in the reference repertoire. Its short, abbreviated nature led librarians to expect quick, ready reference questions. Its online nature led them to expect a preference for electronic resources in the answers. And the growth of distance learning and remote access from dorms, homes, and offices led them to expect heavy use by remote users. However, all of these assumptions proved to be ill founded, at least in the case of Southern Illinois University Carbondale's Morris Library. Early studies there showed that over two thirds of users were actually physically in the library when using the service (Fagan and Desai, 2003). Both in-house and remote users were asking all types of reference questions and they asked for print as well as electronic sources. Specific search questions were actually more common than ready reference questions (Desai, 2003). The essential difference was simply the medium; in other significant respects the remote service was similar to traditional reference.

These findings led librarians at Morris to the conclusion that their IM service ("Morris Messenger") should be providing the same level and type of service online as it does at the traditional reference desk. Particularly in an academic library, librarians should use the reference transaction not only to answer questions but also to improve the information retrieval skills and information literacy of their patrons. The library's Mission Statement emphasizes instruction; reference service at Morris Library is as much about instruction as it is about answers. The RUSA document outlining best practices for reference service, Guidelines for Behavioral Performance and Reference and Information Service

Providers (RUSAa), makes it clear that instruction should be an integral part of any reference transaction. It follows that instruction should not be neglected in the online environment.

Convinced of the importance of library instruction, the authors felt a study of instruction via virtual reference was needed. They felt that neither the nature of the sources nor the medium used for seeking help should affect the likelihood of receiving instruction. Nor should librarians assume that patrons who ask questions online are already conversant with methods of online research. The online patron should not be shortchanged simply because librarians may associate chat with quick exchanges.

Literature Review

Students of today turn increasingly to the Internet for their information needs. Internet information sources are valuable in many contexts, but knowledge of scholarly sources and library methods of retrieval are essential in the academic environment. Searching the Internet requires different skills and procedures than searching academic databases. A recent OCLC report based on a large scale survey confirmed that "Library users like to self-serve" (De Rosa, 2005, 6-2). Instruction in research methods fosters that ability to find information independently. Co-browsing is a tool designed to provide the same hands-on instruction in online database searching as offered at the physical reference desk.

Studies evaluating reference services have a long history. They typically attempt to measure the accuracy of answers, approachability of staff, appropriateness of referrals, patron satisfaction, or some combination. Most have used the "unobtrusive" method, in which proxy patrons pose contrived questions to test performance. A classic example of the unobtrusive method is the study by Hernon and McClure, who concluded, based on analysis of answers to predetermined questions posed by proxy patrons, that librarians give correct answers on average only 55% of the time (Hernon and McClure, 1986). Dilevko found similar results in an unobtrusive study of Canadian libraries (2000). In accounting for these results, in addition to staff inability or unwillingness to provide good service, Dilevko cites library administration's failure to provide enough staffing, training, and collection development monies necessary to fulfill patron needs. Childers notes that the questions posed in unobtrusive studies are usually of the "short, factual, unambiguous" type, a type which he estimates represents no more than one eighth of the questions typically received at a reference desk (Childers, 1991, 34). Childers mentions "bibliographic instruction and advice on search strategy" as other important research "products" (34) not addressed in typical unobtrusive evaluations.

In a critique of the weaknesses of unobtrusive measures, Whitlatch, like Childers, cites the factual, unambiguous nature of the questions selected for testing and notes that, particularly in an academic setting, providing instruction is more

appropriate than factual answers. In Whitlatch's study, "the majority of queries are related to broad and narrow subjects or involve requests for instruction in the use of library reference materials" (1989, 183-4). Whitlatch concludes that using real questions posed by real patrons, answered by staff who are aware of and consent to the study, provides a more realistic picture of the quality of the reference service. In the Whitlatch study, administrative consent to the project was secured, and researchers met with reference providers and explained their research procedures and goals: "They were made aware of the importance of not biasing the survey results by selecting preferred questions or treating surveyed users differently" (182). While this meant that reference providers knew that their service was being evaluated, it also meant that more qualitative data on the transaction could be gathered on such measures as perceived patron involvement in the process, difficulty of the question, and other constraints such as time available for the question. This method, though more subjective, provides a more complete picture of the service than an objective study of a very small aspect of the service (i.e., factual questions, one eighth of the total questions). Norlin (2000), in a variation on the unobtrusive method, conducted a study in which proxy patrons posed real questions related to their own research, asked unobtrusively. Hubbertz (2005), in an evaluation of the merits of unobtrusive testing, noted ethical concerns with the unobtrusive method, since it involved deception in that the proxies are not real patrons and the librarians are not informed that they are being observed and evaluated.

Recent studies have evaluated virtual reference services, using transcripts from email or chat transactions (e.g., Stacy-Bates, 2003, Ward, 2004). These follow the unobtrusive methodology, using proxy patrons asking predetermined questions. With virtual reference, however, since no observer is present during the transaction and all analysis is done after the transaction is completed, some researchers have used actual patron transcripts. Since neither patron nor reference provider is aware of the evaluation in progress, it is considered objective. (e.g., Carter and Janes, 2001). It also has the advantage of avoiding one of the shortcomings of the unobtrusive method as usually practiced, i.e., using factual questions only. Analyzing transcripts from chat sessions provides the most complete and accurate picture of the reference transaction. It is even more complete than observation of physical reference desk transactions since the entire transaction is captured.

Few studies address the issue of instruction via virtual reference. The RUSA Guidelines for Implementing and Maintaining Reference Services advises providing the same level of service in the virtual as in the physical environment. It also stresses instruction in the process of finding information (RUSA, 2004b). Green and Peach note the lack of focus in the literature on instructional activity (at the physical reference desk). They developed a survey loosely based on the Wisconsin-Ohio Reference Evaluation Program to target the individual teaching activities of librarians. They found that over 90% of patrons felt they learned something from the transaction (2003, 258). The questions in the present study

are modeled after some of the concepts from the Green and Peach research, applied to virtual reference. Woodard (2005) summarizes the methods and models by which good pedagogical practice can be transferred from the physical to the virtual milieu, as well as the limitations and barriers. The current study attempts to measure instructional practice in the virtual environment.

To gauge instructional activity and type, the authors reviewed the literature and found few examples of measures. Ward measured instructional activity as one aspect of the completeness of chat transactions. He developed two measures of instructional technique: 1) recommending a specific database 2) suggesting keywords or subject headings (2003, 49). The authors adopted these measures in the current study. In addition, the authors, reviewing a sample of the transcripts, observed two additional distinct types of instruction technique, Modeling and Leading. Modeling presents instruction in large chunks whereas Leading, which takes a step-by-step approach, is a more synchronous approach. A fifth technique, Lessons, was also found in a few cases. Definitions of each technique follow.

Method

In the spring of 2005, the first of two studies was conducted, using data from Morris Library's chat service, Morris Messenger. The key questions of this study were:

- Do chat users want instruction in chat?
- Are librarians providing instruction?
- How are librarians offering instruction?
- Do users feel they are learning via chat?

Study 1 covered a seven week period. Transcripts of all chat conversations were analyzed to determine if and when instruction was offered, and what methods were used by librarians. A user survey also was conducted to determine whether patrons were receptive to instruction via chat and whether they considered it an effective instructional tool. Results of this study are analyzed in Desai and Graves (2006).

In the summer of 2005 the library switched from its home-grown software to a commercial virtual reference product. The new product featured co-browsing, a tool which allows both librarian and patron to view the same screens simultaneously. In true co-browsing, screen actions can be controlled from either the patron's or the librarian's computer. This gives patrons hands-on experience; they learn how to find information step-by-step by following instructions and/or viewing librarian actions. This feature would seem to be the ideal teaching tool for the virtual reference environment. To determine if this is indeed the case, the authors conducted another study in the fall of 2005, based on use of the new software. Again they conducted a survey of users and analyzed all relevant

transcripts from a seven week period. This article reports on the results of Study 2 and compares them to results of Study 1. The key question of the current study, in addition to the questions of Study 1, is: does co-browsing enhance our ability to provide instruction?

Transcript Analysis

The authors developed the following categories for Study 1 to determine the relationship between query format and likelihood of instruction. These categories were maintained in Study 2:

- 1: Patron asked for and received instruction
- 2: Patron asked for but was not given instruction
- 3: Patron did not ask for but got instruction
- 4: Patron did not ask for and was not given instruction
- 5: No instruction was possible given the nature of questions, e.g. policy questions
- 6: Instruction was not asked for, not given, but was offered

Categories 1 and 2 were further broken down to reflect the format of the question, i.e., whether the questions were direct or implied requests for instruction.

- | | |
|-----------|--------------------------------------------------------------------------------------------------------|
| Direct: | Patron asked for instruction in a direct manner by asking "How do I, How do I find, Show me how, etc." |
| Indirect: | Patron implied that he/she wanted instruction by asking "I'm looking for, Can you help me, etc." |

Questions asking "where" were classed as requests for instruction if they referred to finding information in general. They were classed as directional, non-instruction requests, if they asked simply for a physical location.

Transcripts from Categories 1 and 3, where instruction was provided, were analyzed to determine which methods of instruction were being used in the online environment. The methods are:

- A: Modeling
- B: Resource Suggestion
- C: Terms Suggestion
- D: Leading
- E: Lessons

Modeling refers to the practice of explaining how to find information but without making sure the patron is following along step-by-step. It outlines all the steps at once. This can be an advantage, for example, if the patron gets disconnected during the transaction, because all the instructions will then be in the transcript available after the session. But it is not hands-on. Woodard warns against sending patrons "ready made scripts" which "chunk" information, possibly

“overloading them with information that they may not be ready to absorb” (2005, 204). In modeling, it is not clear whether the patron understands the steps or will be able to complete them independently.

Resource Suggestion is advice on an appropriate information source, for example, a research database, online catalog, or website. It is usually the first step in library instruction, almost always necessary but often not enough.

Terms Suggestion refers to help with search strategies such as subject headings, keywords, limits, or other database tips such as truncation that will result in a more precise search.

Leading refers to a step-by-step approach in which the librarian explains the steps while making sure the patron is able to follow along. This may be done via text in the chat window while the patron follows the steps in a separate window, or, in the case of a co-browse session, it may be done simultaneously by patron and librarian in the co-browse window. Co-browse is an inherently “leading” instructional tool. Campbell and Fyfe recommend this step-by-step approach: “Learners need step-by-step instruction so they can learn the process and will be able to replicate it” (2002, 27).

Lessons refers to explanations of scholarly or library concepts necessary to understanding the search process or research assignment. For example, a patron who asks only for scholarly sources may need a lesson on the peer review process.

Each of these instructional techniques was counted only once per transcript, regardless of the number of instances during each transaction.

Finally, transcripts were analyzed to determine the prevalence of two questionable reference practices, i.e., page pushing and citation pushing. Page pushing is a feature of most chat software. It allows the librarian to “push” the patron’s browser to a particular web page. This practice does not provide instruction or hands-on experience in how to get to the information. It is doubtful whether the patron would be able to figure out how to get to that page independently after the transaction is over. Citation pushing consists of providing citations without any explanation of how they were found. Again, this practice does not help the patron learn how to find information. Both of these practices therefore represent missed opportunities for instruction. In both studies, each instance of citation and page pushing was counted.

In Study 2, two additional factors were counted: co-browse sessions and technical difficulties. To analyze the effect of co-browsing on instruction, the co-browse sessions had to be analyzed separately. Sometimes technical problems interrupted or prevented co-browsing successfully. Co-browse technology has not been perfected. Many users encounter technical problems when attempting

to co-browse, usually involving pop-up blockers, firewalls, security or other settings, or browser incompatibility. However, sometimes the problems can be resolved or “work-arounds” can be found. Thus it was important to be able to analyze these instances separately.

Both studies used the actual transcripts from real patrons posing real questions. Librarians were aware that a study was in progress and were assured anonymity but were not informed of the exact nature of the research. Thus these studies follow the Whitlatch model rather than strict unobtrusive methodology. Note: in both studies, for the sake of simplicity, all staff members are referred to as librarians, though some are paraprofessionals. All of them have many years of experience at the reference desk and are very familiar with the library’s resources.

User Survey

Both studies made use of a user satisfaction survey. Both Study 1 and Study 2 included the questions below to gather information on the following topics:

User Demographic

Q: Have you used Morris Messenger before?

Willingness to Learn

Q: I wanted the librarian to teach me how to find the information myself.

Rate of instruction provided

Q: The librarian showed me how to find information for myself.

Did the user feel that they learned?

Q: I learned something about how to find what I was looking for.

User perception of instructional medium

Q: Do you think chat is a good way to learn how to find information?

User Satisfaction

Q: Would you use Morris Messenger again?

In addition to the questions above, Study 2 (on the co-browse effect) included two additional questions with the following choices:

Q: If the librarian did not guide your web browser to specific web sites (co-browse), please select one of the following:

- The librarian tried but couldn’t get it to work.
- I think co-browsing would have been helpful, but the librarian didn’t try it.
- I don’t think co-browsing would have been helpful.
- I would not want the librarian to guide my web browser.

Q: If the librarian guided your browser (called “co-browsing”):

- Guiding my web browser was a good way to learn.

- Guiding my web browser was too confusing.

These questions were designed to gauge patron attitudes toward and experience with co-browsing.

Method Limitations

As in the Whitlatch study, real reference transactions were used. Reference providers were aware that the service was being studied and that their transcripts would be analyzed. Therefore, some subjectivity was inherent in the design. The authors acted as librarians for the virtual reference service in both studies, and transcript analysis included their own sessions. Since the authors staff 30% of the total hours the service is offered, excluding transcripts involving the authors would not give a complete or accurate picture of the service and would significantly reduced the sample size. The coding matrix was well defined to avoid ambiguity and every effort was made to remain objective when coding transcripts. All transcripts also were cross checked by each researcher.

In Study 1, surveys were matched with corresponding transcripts. Unfortunately, the chat platform in Study 2 could not match surveys with corresponding transcripts. Therefore survey responses from sessions linked to the authors' transactions could not be extracted in Study 2. Nor could surveys from patrons who had co-browsing sessions be matched with the corresponding transcript. For comparative data between Survey 1 and 2, all surveys had to be included in the data set.

Results

Data for both studies were collected over the busiest seven week period of their respective semesters. The results of Study 1 and Study 2 (with co-browsing) were compared. A comparison of transcript and survey analyses follow.

Transcript Analysis

In Study 1, 169 transcripts were reviewed. In Study 2, 136 transcripts were reviewed. Those transcripts coded as Category 5 were removed from the analysis. Including Category 5 would have skewed the results since librarians should not be held responsible for providing instruction in instances where it is not possible. An example of such a question would be "Can I pay library fines by credit card?" This is a simple yes/no policy question, and the answer is not available in any print or web source accessible by the patron. Eliminating Category 5 transcripts left 146 transcripts for Study 1, and 118 transcripts for Study 2. All subsequent statistics are based on these totals.

The following pie charts (Chart 1 & 2) represent the percentage of each category's occurrence in their respective study.

Take in Chart 1

Take in Chart 2

The pie charts show similar results in Study 1 and 2. Category 1 (patron asked for and received instruction) was the largest in both cases, followed by Category 3 (patron did not ask for but received instruction). Category 1 showed a slight increase from 43% in Study 1 to 52% in Study 2. The authors speculate that the entry screen for the new software probably influenced patron question format, and this may at least partially account for the increase in Category 1 statistics in Study 2. The chat entry screen in Study 1 was a simple text input box on the library's website. Many patrons misunderstood the chat entry and used it as they would a site search or search engine, often entering a single keyword or phrase rather than a complete sentence or question as their initial query (Desai 2003). In Study 2 a more formalized entry into the chat platform was required. Patrons seemed to understand that they were interacting with a human, and thus queries were more complete.

Category 2 (patron asked for but was not given instruction) remained consistently low at 2% and 3%. Category 3 (patron did not ask for but got instruction) decreased slightly from 40% in Study 1 to 30% in Study 2. This decrease may be attributable to the difference in chat entry, as with Category 1. (In Study 2 there were no instances of queries consisting of a single word or phrase, which would all have been coded as not asking for instruction.) Instances in which the patron did not ask for and was not given instruction, Category 4, were similar, at 12% and 14% respectively. Finally Category 6, those instances in which instruction was not asked for, not given, but offered were recorded as the least common at 3% and 1% respectively. This consistency in the statistics shows that the switch to a commercially-based chat product did not dramatically impact the rate of instruction by the librarians.

Examining specific categories and combinations of categories sheds further light on the relationship between instruction and co-browsing capabilities. Does co-browsing increase the likelihood of instruction in chat reference? Our research indicates it does not. Categories 1 and 3 represent instances in which the librarian practiced instruction. Combining these categories in Study 1 shows an 83% rate of instruction, while Study 2 shows an 82% rate of instruction. The rate of instruction remained remarkably similar. The addition of co-browsing capability did not increase the rate of instruction, which, it should be noted, was already quite high.

The results of Study 1 showed that patron question format affected the likelihood of instruction (Desai and Graves, 2006). In that study, patrons who requested instruction, (Categories 1 and 2), received instruction 95% of the time. Study 2 returned analogous results, with 95% of those in C1 and C2 receiving instruction. This further corroborates the findings from Study 1, that patron question format has a direct effect on the likelihood of instruction, with or without co-browsing technology.

What about those patrons who did *not* ask for instruction; how are they being served? Combining Categories 3, 4, and 6 groups together those patrons who did *not* ask for instruction. Of these categories, only in C3 did the patron actually receive instruction. If C3 is then divided into the total for the three categories, the rate of instruction provided when it is not asked for can be tallied. In Study 1, instruction was provided 77% of the time, whereas in Study 2 instruction was provided in only 68% of the transcripts. The decrease of 9% is cause for concern. While the data does not provide an explanation, the authors speculate that perhaps virtual reference librarians are still uncomfortable with the new chat platform and, given their discomfort, are less likely to perform instruction when not specifically asked. The authors readily admit that more staff training and practice on the new chat platform is needed, especially in light of this research.

In addition to coding each transcript for one of the above six categories, each transcript also was coded for a number of instructional practices. Multiple codes could be used in each transcript, e.g., A, B, and E. However, each code was used only once per transcript, regardless of the number of times it may have occurred during each session. Totals for each code were divided by the total number of transcripts for each study to see which techniques were used most often. Results from Study 1 and Study 2 were compared to investigate if the addition of co-browsing had an impact on instructional practice. The following bar graphs (Chart 3 & 4) depict the percentages of techniques used in each study.

Take in Chart 3

Take in Chart 4

In both Study 1 and 2, the most common form of instructional practice was Resource Suggestion which occurred in 60% and 77% of the transactions respectively. Leading followed, occurring in 42% and 25% of the transcripts. In Study 1, Terms Suggestion was the third most common instructional practice with 29%. However, in Study 2 Terms Suggestions was fourth, occurring in 20% of the transcripts and Modeling came in third with 23%. In Study 1, Modeling was fourth, occurring 23% of the time. Finally, transcripts coded as Lessons came in last in both studies, at 5% and 3% respectively. Percentages do not total 100% because transcripts could include more than one instructional technique.

What do these codes tell us about the effect of co-browsing on instruction? The front runner, Resource Suggestion, represents common sense reference practice. Resources are the starting point of most reference transactions, especially those involving instruction. Study 2 showed an encouraging increase in Resource Suggestion of 17%, but the data gives no explanation for the increase. However, it is interesting that there was also a decrease of the same amount, 17%, in Leading technique in Study 2. Occurrences of Modeling and Lessons remain comparable in both studies; there was a decrease of 9% in Terms Suggestion. Is the new co-browsing software the cause for these changes? We cannot be sure.

Any instance of co-browsing would be coded as Leading. Perhaps some librarians avoided co-browsing because of discomfort with the new technology or technical problems. However, Leading can still be practiced in chat by offering a successive series of steps via dialogue. Librarians seemed to be comfortable using the Leading technique in the original software as evidenced by Study 1. More study is needed to discern why this instructional practice experienced a decline.

The data for Terms Suggestion may have been affected by a limitation of the current chat platform (Study 2). Transcripts were analyzed for instances of each instructional code. However, in transcripts with co-browsing, some instances of Terms Suggestion may have been missed because chat transcripts do not record terms typed into the co-browse window. Only typing in the chat window is recorded in the transcript. Librarians need to be aware that terms typed into the co-browse window do not appear in the chat transcript. Patrons using the transcript to reconstruct their search will not have a record of the terms used. For this reason, typing all terms into the chat window is better reference practice, and it has the further advantage of giving the patron practice in inserting terms into the correct fields in the database.

Transcript analysis also explored questionable reference practices. Both page pushing and citation pushing were classified as questionable practices because they preclude instruction on how to get to the page or the citation. Each transcript counted the number of times a webpage was pushed or citation given without explanation. Study 1 counted 63 instances of page pushing while Study 2 reported 0 instances. Citation pushing received 56 counts in Study 1 and only 22 in Study 2. It would be imprudent to assume that the addition of co-browsing capabilities in Study 2 eliminated page pushing completely and cut instances of citation pushing in half. Staff training on the Study 2 chat platform stressed co-browsing capabilities since the technology was new to staff. Page pushing received no mention since it existed in the previous chat software. The combination of limited staff training and co-browsing capability may be equally responsible for the elimination of page pushing. Whatever the cause, a decline in these questionable reference practices is welcome.

Next, co-browsing transcripts were separately analyzed. Unfortunately, there were very few to analyze. Of the 118 transcripts in Study 2, only 24 transcripts contained a co-browse session. That is a mere 20% of the total transcripts. Furthermore, 10 (42%) showed some form of technical difficulties. Technical difficulty ranged from an inability to enter into co-browse, issues with pop-up blockers, web browser incompatibilities, and difficulties entering subscription databases. The remaining 14 (58%) transcripts showed co-browse sessions without technical difficulty. While the rate of technical difficulties seems inordinately high, transcript analysis shows that many difficulties were overcome and did not preclude instruction. Many librarians, however, may be unwilling to use co-browsing if they experience a high rate of difficulty, thus furthering the

problem of low usage. At least one staff member reported that she could never get co-browsing to work from her own computer though she was successful on public terminals.

In Study 1, the authors found that patron question format had a direct effect on the likelihood of instruction (Desai and Graves). Comparisons of Study 1 and Study 2 showed the same rate of instruction, 95%, for patrons who requested instruction. Does patron question format also have an effect on the use of co-browsing? Transcripts show that patron question format does indeed make a difference. Of the co-browsing transcripts, 63% were coded as Category 1, patron asked for and received instruction. The remaining 37% were coded as Category 3, patron did not ask for but got instruction.

Furthermore, to discern possible differences between librarians and paraprofessionals in instructional practice and to test our own possible bias toward instruction, the authors further analyzed transcripts based on provider. In Categories 1 and 3 (instruction provided), we found that paraprofessional staff provided instruction 74% of the time. Professional librarians provided it 87% of the time, and the authors provided it 84% of the time. This difference between professional and paraprofessional staff is not surprising. Librarians are trained in the importance of reference instruction and information literacy. It does suggest that more training of paraprofessionals is needed. Of the 24 co-browse sessions, only 3 were provided by paraprofessional staff, 4 by librarians, and 18 by the authors. Again this is not surprising. The authors were responsible for evaluating and testing the software and making the purchase recommendation. They had more training and experience with the product and were committed to testing co-browsing as an instructional tool. Paraprofessional staff had far less training and many have older, slower computers on which to provide virtual reference. The authors recognize that our own bias toward instruction is reflected in the research results; however, because we represent such a large percentage of the hours the service is offered (30%), omitting these transactions would not have represented the service accurately. These results show that all staff need more training in co-browsing, and particularly paraprofessional staff need more training in the importance of instructional practice.

Survey

The survey conducted during Study 1 was repeated in Study 2 with the addition of two questions related to co-browsing. Survey 1, from Study 1, had 50 respondents, a 30% response rate. Survey 2, from Study 2, had a larger return with 62 respondents, a 46% response rate. A separate analysis of Survey 1 was published in a previous article (Desai and Graves, 2006). What follows is an examination of the comparative results of the surveys.

Most responses were relatively consistent between studies. Result sets are depicted in Chart 3. Both surveys indicate that over 70% of respondents are first time users. This is surprising given recent media attention to undergraduates'

computer savvy and use of chat and the length of time the service has been operational (since 2001). The service is consistently well received. When asked if they would use the service again, over 93% indicated their willingness to return. An open comment box at the end of each survey confirmed the positive reception with overwhelmingly affirmative reactions.

Do patrons want to learn from chat reference? Both surveys indicate they do. Almost half (46%) of respondents in Survey 1 “Definitely” wanted the librarian to teach them how to find the information themselves. This percentage increased to 55% in Survey 2. Another 16% and 27%, respectively, answered that instruction from the librarian “would be nice.” Some indicated that they “didn’t care” if the librarian taught them anything. Responses in this category decreased from 30% in Survey 1 to 15% in Survey 2. Apathy towards instruction is something that every reference and instruction librarian encounters frequently. It does not necessarily represent a negative view of instruction; some of these patrons might be willing to accept it if offered. Finally, a very few (8% & 3%) responded “no way, just find it for me,” a very clear statement that instruction was unwelcome. A combination of “Definitely,” “Would be nice,” and “Didn’t care” responses establishes that over 90% of respondents in both surveys were open to instruction. It should be noted that the survey software in Study 2 could not match individual surveys to corresponding reference transactions so some negative responses could be from patrons whose queries did not allow for instruction.

These statistics show that willingness to learn increased slightly with Survey 2 respondents. The authors suspect the change in entry to the service may be a cause for the increase. The entry screen in Study 1 was a Google-like input box on the library’s home page, while the entry screen in Study 2 required no fewer than three clicks to access the service. Queries are submitted through an online form that requires text in a labeled question field, a name, and an optional email address. Requiring patrons to initiate the service in such a formal manner may have eliminated the accidental users who thought they were using a search engine. Intentional reference service users are more likely to be interested in instruction than search engine users and format their questions accordingly. Interest in learning may, in fact, be the reason they decide to use an interactive medium rather than a search engine.

Did respondents feel that the librarian provided instruction? Given that most survey respondents wanted instruction, positive responses to this question would be an indicator of reference success. In response to the survey statement, “The librarian showed me how to find information for myself,” over 96% responded affirmatively in Survey 1 (combination of “Yes” and “Sort of” responses) while only 86% responded affirmatively in Survey 2. Users’ perception of instruction decreased 10% in the survey attached to the co-browse/chat platform. The surveys did not ask respondents to qualify their answers so we don’t know why fewer felt they got instruction. However, this decline tallies with the decline in two

of the instructional techniques, Leading and Terms Suggestion. Perhaps technical difficulties or staff discomfort with the new technology led to less productive sessions. More study is needed to discover the answer.

Did librarians' efforts to provide instruction result in learning? Survey responses showed that chat patrons felt they were learning by an overwhelming majority in both surveys. However, when the data sets are compared, fewer patrons perceived that they learned in Survey 2. While 92% in Survey 1 responded "yes" when asked if they learned, only 77% responded "yes" in Survey 2. An additional 4% and 15%, respectively, marked the intermediate "sort of" response. Again, because survey respondents were not asked to qualify responses, justification for the decline would be speculation. Possible reasons could include any of the above mentioned issues, or other unknown factors. Unfortunately, since we could not link the surveys to the corresponding co-browse sessions, the relationship between learning and co-browsing could not be studied further.

Finally, users were asked if they thought chat is a good way to *learn how* to find information. Responses were fairly consistent at 98% and 92%. The slight decline in Survey 2 is consistent with the decline in patrons' perception of instruction and learning outcomes.

Take in Table I

Survey 2 included two questions related to co-browsing that were not a part of Survey 1. These questions related to patrons' experience with co-browsing as an instructional tool.

The first question asked for users' reaction to co-browsing. Most reported a high satisfaction rate, with 90% stating that co-browsing is a "good way to learn." Only 10% thought the process was "too confusing." Transcript analysis showed an inordinately high rate of technical difficulties with co-browsing. Despite those difficulties, survey statistics indicate that users find the experience of co-browsing to be an effective instructional tool.

However, the statistics for this question may have a large margin of error. Transcript analysis found only 24 instances of co-browsing, thus there should be at most 24 respondents to this question, yet there were 31. So at least 7 survey respondents misinterpreted the question as a hypothetical or thought that they had co-browsed when they had not. Ideally, transcripts would be matched with corresponding surveys, and an analysis of these anomalies would provide more accurate data. In Study 1 we were able to do so; finding that some survey respondents returned positive responses regarding instruction when transcript analysis determined no instruction had been given (Desai and Graves, 2006). Unfortunately, the chat platform in Study 2 was unable to link surveys to transcripts so we cannot know which of the survey respondents actually received a co-browse session.

The second co-browse question asked respondents to complete the statement: "If the librarian did not guide your web browser to specific web sites (co-browse). . ." Approximately 13% indicated that the "librarian tried, but couldn't get it to work." It is clear that this group were willing to try co-browsing since they did not choose to respond "I would not want the librarian to guide my web browser." Another 39% thought "co-browsing would have been helpful, but the librarian didn't try it." The remaining two choices, "I don't think co-browsing would have been helpful" and "I would not want the librarian to guide my web browser" each received 24%. Thus the respondents were split on this question, with a little over half responding positively to the idea of co-browsing and a little under half responding negatively. Some who felt co-browsing would not have been helpful may have asked questions for which instruction (and thus co-browsing) was not possible or appropriate. It is unknown whether those who did not think co-browsing would be helpful would have changed their minds if they had experienced a session. Respondents to this question did not experience a co-browse session and some may not fully understand it. Some may have feared that the librarian would be taking over their computer and be able to view private information on their machine. The confusion evident in the first co-browse question responses may be evident in this question also. It is possible that some users answered both co-browse questions. Some might have indicated that "co-browse was too confusing" and also that "the librarian tried but couldn't get it to work." It is also noteworthy that 73% of all survey respondents were first time users of the chat service so very few would have experienced a co-browse session before.

Conclusions

Comparative transcript analysis and survey analysis proves the majority of patrons are open to instruction. They also feel they are learning and report satisfaction with the service. Certainly, these findings from two separate studies verify that instruction is wanted, needed, and possible in virtual reference. But how does co-browsing fit into the scheme of library instruction via virtual reference? The small sample size of co-browse sessions makes it unwise to draw firm conclusions. More study is needed. However, the following represents the authors' preliminary theories.

We conclude that instruction should be provided regardless of patron question format. In both studies, over 90% of survey respondents were open to instruction, while only 50% asked for instruction in their queries. Co-browsing is one tool of many for providing that instruction. It is not the only tool and not a panacea. Study 1, with no co-browse ability, already showed high levels of instruction. Therefore it is not surprising that Study 2 showed no increase in instruction despite the availability of co-browsing.

Despite low use in this study, the authors believe we should provide more co-browsing opportunities. As a form of instruction, co-browsing can be an effective teaching technique. Even for simple bibliographic queries where no instruction is requested, librarians can use it to show how they go about finding materials. It is the optimal instructional technique, essentially leading step-by-step. It is analogous to turning the computer screen and/or keyboard toward the patron at the physical desk as the search is conducted. It provides opportunities for both visual and text-based learning, as well as hands-on learning, and thus is more likely to lead to learning retention.

Many librarians may be hesitant to try co-browsing because of reported technical difficulties. Yet technical difficulties can sometimes be overcome; they do not always preclude a successful co-browse session. While the technology continues to evolve, libraries could benefit from the opportunity to provide input into its further development for library settings. As students are exposed to more and more online learning tools such as WebCT, online bulletin boards, and chat rooms, libraries will need to keep pace. Over 90% of survey respondents felt co-browsing was a good way to learn. Thus, despite technical difficulties, co-browse sessions were overwhelmingly well received in our study.

Further research

The current study is based on newly implemented software and should be regarded as preliminary. Certainly results indicate that more staff training is needed before the study is repeated so that providers are more comfortable with the technology and thus more likely to use it. For a better understanding of the impact of co-browsing on instructional activity, the current study could be repeated on a larger scale, either at a single institution or across several institutions.

The methodology developed for this study of virtual reference could be adapted and used to study instructional behavior at the physical reference desk. Comparing virtual and physical reference desks using the same criteria and measures would provide valuable insights into the strengths and weaknesses of each. If we are to provide the same level of service in the virtual as in the physical environment, the study needs to be repeated at the physical reference desk to determine whether we are indeed providing equal service. The authors plan to undertake this study in 2006. As library users become more reliant on technology, reference services need to place less emphasis on the medium of service and more on the content.

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Charts and Figures

Chart 1: Study 1

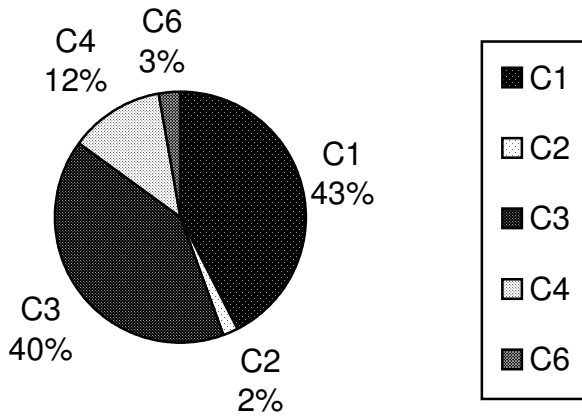


Chart 2: Study 2

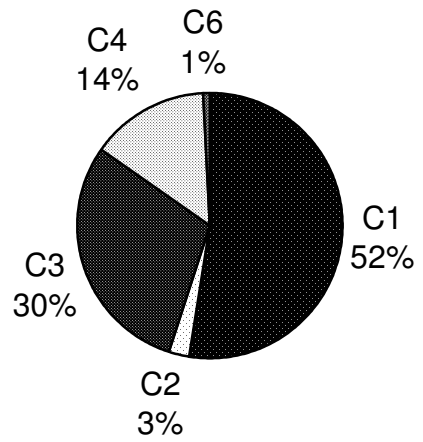


Chart 3: Study 1

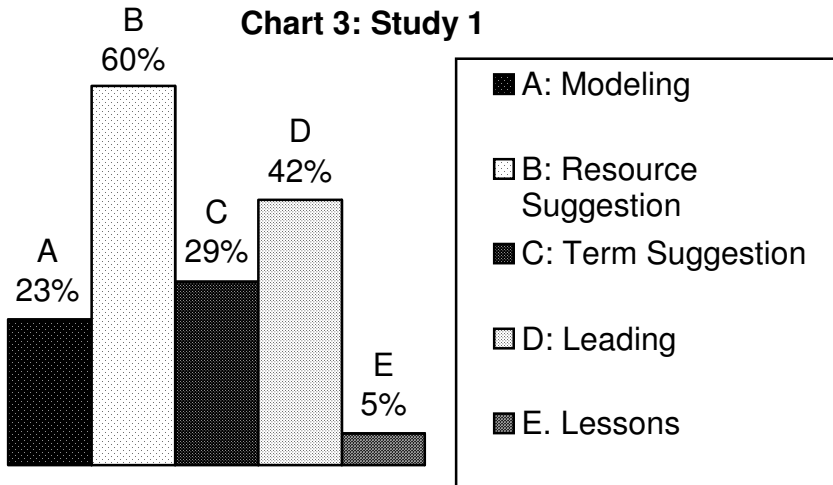


Chart 4: Study 2

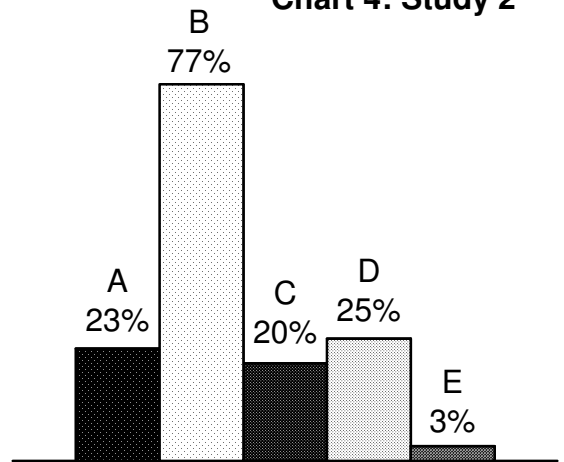


Table I

	Survey 1	Survey 2
<i>Have you used Morris Messenger before?</i>		
Yes	30%	27%
No	70%	73%
<i>Would you use Morris Messenger again?</i>		
Yes	98%	93%
No	2%	7%
<i>I wanted the librarian to teach me how to find the information myself.</i>		
Definitely	46%	55%
Would be nice	16%	27%
Didn't care	30%	15%
No way, find it for me	8%	3%
<i>The librarian showed me how to find the information for myself.</i>		
Yes	80%	71%
Sort of	16%	15%
Not at all	4%	14%
<i>I learned something about how to find what I was looking for.</i>		
Yes	92%	77%
Sort of	4%	15%
Not at all	4%	8%
<i>Do you think chat is a good way to learn how to find information?</i>		
Yes	98%	92%
No	2%	8%