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## Can Consortial Reference Partners Answer Your Local Users' Library Questions?

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## CAN CONSORTIAL REFERENCE PARTNERS ANSWER YOUR LOCAL USERS' LIBRARY QUESTIONS?

### **Abstract**

The purpose of this article is to explore location-based questions as a weakness of virtual reference consortia and discuss how to mitigate related issues. Content analysis of how both local and non-local academic librarians responded to location-based questions provides insight into considerations academic libraries must make when participating in a virtual reference consortia. Unobtrusive testing analyzed the local knowledge assumption that non-local librarians have difficulty answering questions about libraries beyond their own. The results from these two methods indicate academic librarians have some difficulties providing responses to library location-based questions and a discussion on overcoming this weakness is included.

## Introduction

Between 2000 and 2008, 65 percent of the 176 academic libraries recently surveyed saw declines in FTE staff [1]. Virtual reference consortia provide an example of how academic libraries can simultaneously cut staffing costs and expand reference services by pooling human resources. Virtual reference consortia allow many academic libraries to offer reference service with increased hours, central software purchasing and maintenance, the potential for more rapid subject expert referrals, and the savings related to all three. Consortial services also usually by definition expand the geography from which users' questions may originate and require academic librarians to find responses to questions concerning a greater number of libraries and other locations. The purpose of this article is to explore the weakness of location-based questions in virtual reference consortia and discuss how to mitigate issues related to location-based questions.

The types of queries that concern a georeferenceable site are referred to as location-based questions [2]. Inquiries concern either questions about a location (e.g., *what time does the library close today?*) or questions about the attributes of a location (e.g., *how much do I owe?*). Many location-based questions asked at academic libraries are library-specific. Prior studies assumed that local librarians should easily answer questions about their own libraries because of the local knowledge they have about their own libraries' services and resources and conversely assumed that non-local librarians would have difficulty responding to location-based questions concerning other libraries [3-8]. In this study, *local*

*knowledge* is defined as knowledge “practical, collective and strongly rooted in a particular place” that forms an “organized body of thought based on immediacy of experience” and refers to what librarians know by merely working for a particular library [9, p. 75]. To provide responses to location-based questions about many libraries, academic librarians must reach out beyond their local knowledge cache and discover library-specific information that may not be evident *off the top of their heads*.

A dissertation explored this phenomenon and utilizing three methods; (1) content analysis; (2) focus groups; and (3) unobtrusive testing. The methods were iterative and findings from each method influenced the successive methods. Some subsets of the data from the content analysis and focus groups sections have been separately reported [2, 10]. The content analysis of chat reference consortium transactions that is reported in this article uses some of the same data from a previously published article on the types and percentages of location-based questions; however, this analysis presents new interpretations and synthesis focusing solely on academic librarians and the transcripts responded to by academic librarians. Content analysis of how local and non-local academic librarians responded to location-based questions provides insight into considerations academic libraries must make when participating in any virtual reference consortia.

The current article also reports on the use of unobtrusive testing to examine the local knowledge assumption. Unobtrusive testing questions were derived from actual questions found in content analysis. The proposed questions

were then deemed typical and reasonable by a panel of librarians staffing the service. The administration of unobtrusive testing questions allowed for immediate determination of responses to questions with known and findable answers.

The results from these three methods used in the dissertation study indicate that academic librarians, both local and non-local, have some difficulties providing responses to library location-based questions. These results highlight issues related to virtual reference consortia that academic libraries may overcome with modifications to their approaches to sharing local information and training consortial staff. Possible implications for administrators include unwarranted costs, increased search time for librarians and users, user dissatisfaction and increased complaints, lower virtual reference usage, reduction in consortia participating agencies, and other administration and logistical problems. These issues illustrate the weakness location-based questions may present in some virtual reference consortia.

This article will explore considerations that may help to mitigate this weakness, and other practical topics related to virtual reference consortia including multitype library consortia.

### **Review of Related Work and Study Background**

The creation, adoption, and redefinition of librarians' service roles resulting from e-services, e-resources, and mobile devices frees academic librarians from the constraints of operational hours and geography when helping users locate

information [11, 12]. Although the benefits of anyplace, anytime services reduce the importance of distance between the user and librarian for service provision, the locations of the user, librarian, and sites within user questions remain pertinent to service quality [13, 14]. Virtual reference affords users and academic librarians the capability of real-time messaging [15, 16].

In 2010, 72 percent of academic libraries reported offering virtual reference services and 32 percent of academic libraries reported utilizing instant messaging applications [17]. The most recent study of virtual reference services in public libraries found that 49 percent offer chat reference [18]. Clearly, the practical benefits and cost savings related to virtual reference have resulted in substantial adoption.

The statewide chat reference consortium evaluated in this article, hereafter referred to as the chat consortium, has experienced an increase in participating libraries of all types. From the chat consortium's first year of operation, 2003/2004, the number of questions received increased from 13,034 transactions to a total of 72,712 transactions in the most recent full year of service [19]. Other regional and national chat consortia also have experienced similar growth in questions and participation [20]. During this study's content analysis and unobtrusive testing, the chat consortium had grown to 103 participating agencies from its original 76. The chat consortium included 50 public libraries, 49 academic libraries, one school district, one museum, the state library and archives, and the statewide virtual school at the time of this study. With more libraries



facing cuts to staff, the benefits of the chat consortium outweighed any weaknesses and participation in 2012 grew to 121 members.

With the growth in participation and questions, those academic librarians staffing this statewide service are serving a broad geographic area. One study found that due to the greater numbers of participating agencies, librarians are not local to 73.8 percent of questions asked [2]. Because of shared staffing, the majority of questions asked in any virtual reference consortia will likely be answered by non-local academic librarians. By analyzing the academic librarian responses in this chat consortium, one can begin to identify issues for any academic library currently participating in or only now considering joining a virtual reference consortium.

Fortunately for researchers, virtual reference creates transaction artifacts that allow for evaluation at levels of detail beyond the data available from other modes of question answering, and it provides data that are more easily collected [21]. All evaluation occurs in a political context with different, and often competing, stakeholder groups, and this holds true for the studies of location-based questions [22]. Due to the various types of libraries analyzed and differing definitions, findings on the percentage of location-based questions found from six prior studies using content analysis ranged from 6.8 percent to 60.1 percent; 29.0 percent [2, 4-8].

All prior studies were of virtual reference services; therefore, it is clear that any virtual service gets a considerable number of these question types. Despite the discrepancy in percentages, the studies all share the common, untested

assumption that local librarians would have a higher rate of correct responses than non-local librarians in answering these types of questions. Some academic libraries cited this assumption as a reason not to join virtual reference consortia. This article is an attempt to test the assumption for the first time.

Several researchers have used content analysis in the study of virtual reference to evaluate service quality, question types and quantities, as well as the interpersonal communication between librarians and users [16, 22, 23]. "Content analysis is a research technique for making replicable and valid inferences from texts" [24, p. 18]. Content analysis of how local and non-local academic librarians responded to location-based questions provides insight into considerations academic libraries must face when in a virtual reference consortia.

Unobtrusive testing provides another approach to understanding location-based questions, but also a method to test that local knowledge assumption. Researchers have used unobtrusive testing in reference evaluation since the 1970s [25]. In unobtrusive testing, a librarian unaware of the evaluation responds to a proxy user's question. The testing involves the assessment of the librarian's responses to a predetermined set of factual questions. Hernon and McClure conducted several other studies in a variety of environments throughout the 1980s, which suggested that a user asking a librarian a certified, typical reference question has a 55 percent chance of receiving a correct and complete response [26-28]. A correct and complete response was defined as a correct response with an authoritative source provided (i.e., citation) [29]. In addition, referrals to another library or entity counted as an incorrect response and this received some

criticism from practitioners. Most practitioners viewed a referral as a correct answer even if not the answer itself because in many instances the correct answer might be found by the resource or library to which the person was referred.

A recent unobtrusive testing study removed the formal citation requirement for a correct response and asked two e-mail questions to 54 libraries 324 times to determine the rate of correct response [30]. The study found a 75.8 percent correct rate for a question on locating a dissertation at a library and 68.9 percent correct rate for a question concerning the population of a place [30]. These correct responses occurred at a slightly higher rate than the responses of the prior f2f studies that required a reference. Perhaps these question answers were also easier to locate.

With e-mail unobtrusive testing, a researcher has more control over who receives a question. The software used by the chat consortium in this study triages all questions in the following manner:

- (1) The question goes to the agency associated with the user's entry portal;
- (2) If a local librarian is unavailable, the question queues to a similar agency;
- and
- (3) Finally, if a similar agency librarian is unavailable, the question queues for any available librarian in the service.

For example, if the student's local university librarian is unable to respond, the software then redirects the question to any available university librarian. If no other university librarian is available to respond, then the next available librarian from anywhere in the consortium responds.

This type of triaging presented limitations to controlling the librarian that would receive each question in this study's unobtrusive testing. This triaging also means, in this multitype library consortium, that academic librarians were answering some questions from users beyond academic libraries. In this study's data, assessing the users' affiliations would be difficult because 28.5 percent of the user entry point fields were blank. However, every librarian field was collected in the data and librarian type was easily identifiable.

### **Research Method and Design**

Content analysis and unobtrusive testing were used to evaluate how local and non-local academic librarians responded to location-based questions in a chat consortium. This study evaluated how academic librarians responded to location-based questions, in total and by type of question, for both local and non-local academic librarians guided by the following research questions:

1. How do academic librarians respond to location-based questions?
2. What is the rate of correct responses to library location-based questions?
3. What is the rate of correct responses for local librarians?
4. What is the rate of correct responses for non-local librarians?

Three elements from the Reference and User Services Association (RUSA) guideline were chosen for use in content analysis and unobtrusive testing because

of their relevance to location-based questions—3.8 (i.e., Clarifying questions), 4.9 (i.e., Resources used), and 5.7 (i.e., Referral) [31].

The focus of both methods is on the academic librarians' question-negotiation elements. Users input questions to the service, which may be location-based questions or not. Academic librarians may use clarifying questions, resources, and referrals to address a location-based question. The codebook and protocol used for content analysis and unobtrusive testing reviewed all chat transcripts occurring during two months of the statewide chat reference consortium and two weeks of unobtrusive testing.

### *Content analysis*

The 7,021 chat transcripts from October and November 2008, respectively 3,906 and 3,115 in each month, were used for content analysis. The chat consortium usually deletes transcripts at the end of each month to protect users' privacy and made a special exception for this study. Therefore, 2008 data were chosen because of availability. Content analysis included removing unusable chat transcripts. Unusable transcripts include transcripts used for system tests, trainings, or librarian-to-librarian communications [32]. The usable question transcripts provided data to determine library location-based questions responded to by academic librarians.

Prior to coding, interrater and intrarater reliability testing of the codebook and protocol was conducted. External coders were trained and coded 30 randomly selected transcripts using the content analysis protocol and codebook. A

Krippendorff's alpha of .8108 was obtained [33]. To address issues related to intracoder reliability, the proxy user coded 30 randomly selected transcripts using the protocol twice, allowing a month between coding, in order to ensure intracoder reliability over time and a Cohen's kappa of .860 was obtained. This indicates a high level of reliability for the protocols used in content analysis and unobtrusive testing.

### *Unobtrusive testing*

This study mitigated some of the limitations of unobtrusive testing by using actual questions derived from content analysis of two months of the service. Question development produced questions that reflected those actually asked via the service and concerned information that participating academic libraries actually controlled. Content analysis of the two months of the service found library location-based questions comprised 39.3 percent of the total questions asked to the chat consortium [2]. Ten subtypes of library questions identified included those listed here in descending order of frequency asked: *circulation policies* (897), *find a physical item* (705), *log-in* (517), *library cards* (220), *library services* (152), *hours* (61), *employment* (39), *library location* (20), *staff contact information* (16), and *inside library location* (7).

A panel of librarians that staff the service reviewed the proposed questions from content analysis of each library type and determined that the derived questions were representative and typical. All library location-based questions

were deemed representative and typical by at least four out of five librarians on the panel.

After those question development steps, the researcher validated that the questions had correct responses that were known and findable. The derived questions were then asked through randomly assigned participating agencies' web portals at different times in an attempt to reach academic librarians staffing the service. The unobtrusive testing included asking one of these 118 questions every hour until all questions were attempted. The testing began on September 28, 2009 at 10:00 AM EST, continued for two weeks until all questions were attempted and answered, and ended at midnight on October 11, 2009. The service staff changed hourly; therefore, the rate of one question per hour was utilized to reach more academic libraries, reduce any burden on the service, and provide time for the researcher to immediately determine the correct response to each question.

All one-hundred and eighteen questions were asked over a two-week period. Academic librarians were only reached 49 times. In 28 instances consortial staff responded, public librarians answered 40 questions, and in one session, a technical issue closed the software before a provider was reached. Table 1 provides a list of the question types and an example of each from content analysis results.

TABLE 1  
LIBRARY LOCATION-BASED QUESTION TYPES AND EXAMPLES

Types	Example
circulation policies	i want to place a hold on a book
find a physical item	Is there any way I can obtain a book that is not current available?
log-in	I cant seem to sign on using the pin number I remember using last.
library card	i need help cuz i lost my card
library services	Can you print at the library?
hours	do u know what time murdock branch library closes?
employment	uh hi is this library offerering jobs
library location	What library branches are close to me?
staff contact information	i am from st pete i need a pinellas park public library representative
inside library location	on which floor is the fiction section located?

During unobtrusive testing, each question's library was modified to match the library portal where the question was asked.

Data analysis of unobtrusive testing included validating correct responses, identifying whether clarifying questions and resources were used with the response or not, and if the question was referred. As discussed, previous studies of the rates of correct response required a citation for a complete and correct



response [26-28]. This study does not require a citation like the original 55 percent rule studies, but does require a correct response as a librarian giving the proxy user the vetted answer. Therefore, referrals were counted as incorrect answers.

To test the assumption concerning the rate of correct responses between local and non-local librarians, definitions were required. Local librarians were determined to be local only in relation to questions concerning their library. The librarians considered non-local were those that were not affiliated with the library the question concerned. However, reaching local academic librarians proved difficult. At peak hours, it was difficult to predict what type of librarian would be available to assist the proxy user. Also, some participating libraries only staff the service once a month and reaching those academic librarians was nearly impossible.

## **Results**

The results present findings from content analysis and unobtrusive testing. Both methods produced similar results related to the question negotiation approaches used by academic librarians. Table 2 shows the percentages of RUSA guideline elements use in content analysis and unobtrusive testing.

TABLE 2

## CONTENT ANALYSIS AND UNOBTRUSIVE TESTING RESULTS

RUSA guideline elements	Counts		Percentage of transcripts	
	Content analysis	Unobtrusive testing	Content analysis	Unobtrusive testing
<i>clarifying questions</i>	551 out of 864	37 out of 49	63.7%	75.5%
<i>resources</i>	313 out of 864	22 out of 49	36.2%	44.9%
<i>referrals</i>	386 out of 864	24 out of 49	44.6%	48.9%

Clarifying questions occurred in 63.7 percent of library-specific location-based question transcripts. Clarifying questions were used by academic librarians to determine the library of the user's question, to determine what resources a user had already used, and to help the user with any other questions. Although the users' location may be inferred from their entry web portal or stated in their original question, academic librarians often will clarify the locations in their questions before responding. An example of a clarifying question is *Where have you already looked?*

The use of resources occurred in 36.2 percent of location-based question transcripts. Use of resources included offering detailed search paths (including URLs) and names of resources used to formulate the academic librarian's response. Most resources were URLs, which included library websites. In a few instances, a library's OPAC was utilized to respond to library location-based questions without a URL.

Referrals occurred in 44.6 percent of library location-based question transcripts. Referrals operationalized in this study resulted in the inclusion of any occurrence when an academic librarian referred the user back to their local library. In some instances, the referrals included a clarifying question, a resource, or both in an effort to attempt to respond to the question before referral. However, in some instances an immediate referral occurred without any attempt to respond to the question. A typical example of an immediate referral is *I am a librarian at SCC and not the best person to ask a college specific non-research question.*

The following presents the rate of correct responses for both local and non-local academic librarians, in total and by question type. Table 3 provides the descriptive results of unobtrusive testing. Only 5 local academic librarians were reached; therefore, these frequencies did not allow a chi-square test to be performed to test the local knowledge assumption in this exploratory study [34]. Readers should also note that other unobtrusive testing questions of each type were asked, but many were answered by public librarians and staff at the consortium's headquarters.

TABLE 3  
CORRECT RESPONSE RATE

Type of questions	Asked	Non-local academic librarians' rate of correct responses	Local academic librarians' rate of correct responses
hours	5	100% (5 of 5)	100% (1 of 1)
library services	2	100% (1 of 1)	100% (1 of 1)
staff contact information	2	100% (2 of 2)	None reached
library location	4	100% (4 of 4)	None reached
find a physical item	4	66.6% (2 of 3)	100% (1 of 1)
inside library location	4	75.0% (3 of 4)	None reached
circulation policies	7	50.0% (3 of 6)	0% (0 of 1)
log-in	11	36.3% (4 of 11)	None reached
library card	4	33.3% (1 of 3)	0% (0 of 1)
employment	6	16.6% (1 of 6)	None reached
TOTAL library questions	49	57.7% (26 out of 45)	60.0% (3 of 5)

Local academic librarians' rate of correct responses was 60 percent (3 out of 5) as opposed to the non-local academic librarians' rate of nearly 58 percent (26 out of 49). All 21 of the incorrect responses from non-local academic librarians were a result of the proxy user's referral back to his or her local library. Again, many practitioners were outraged at earlier unobtrusive testing studies that considered a referral an incorrect response; however, this study also considers a referral as an incorrect response. A referral does not provide the user with the answer to his or her question. Also, each question asked in this study had a findable answer on library websites verified prior to asking the question. This phenomena actually undermines the benefits of consortial virtual references services and is the key weakness highlighted by these results.

The rate of correct responses by question subtype provides more practical insight for virtual reference consortia. By sorting question type response rates, a continuum of local knowledge emerges and recommendations are provided in the discussion on how to disseminate information to assist non-local academic librarians answering local users' questions. The RUSA guideline elements used in both content analysis and unobtrusive testing indicate academic librarians find answers to many location-based questions, but consistently refer some of the types.

### **Discussion**

The research leads to some specific recommendations to mitigate the weakness of location-based questions. The inability to answer location-based questions when they are asked frequently presents impediments to the success of large consortia. Potential user dissatisfaction, increased complaints, costs related to the increased search time for librarians and users unable to find local information, and the potential for these referral experiences to lower future virtual reference usage support the concept of location-based questions as a consortial weakness. The results indicate a high rate of referral to some library location-based questions. Referrals have implications for reference research and those managing and participating in any virtual reference consortium.

### *Limitations to the study*

The rate of correct responses to library location-based questions found in this study is not generalizable because of limitations in the study methodology including: the number of questions asked, the question development process as consortium specific, the triaging of the chat software, the shared staffing model that included public librarians, and the variety of questions asked. The number of questions was small to minimize the burden on the service. Also, with only a single proxy user the prospect of asking more questions would have been difficult in the real-time environment of chat reference. Any predetermined assignment of location-based questions to reach local or non-local academic librarians would be problematic due to this chat consortium's triaging and shared staffing.

Future research could use the same procedures to develop typical and reasonable unobtrusive testing questions to evaluate other library services. The question development steps would be most useful in virtual reference where pools of actual transactions are kept electronically to produce typical and reasonable questions. Additionally, future studies administering unobtrusive testing could try to better control whether the academic librarian reached will be local or non-local. Triaging is not consistent between different chat software products; therefore, other studies may not face the same obstacles as this one in scheduling question administration.

By working closely with managers, researchers can use a preexisting work schedule to tailor questions to either be local or non-local librarians. Future practical studies could explore other issues related to the management of virtual reference consortia, such as optimal staffing models, optimal number of

participating libraries, different approaches to triaging in multitype consortia, the potential for standards in service and website usability across consortia, and the real reasons behind the *de facto* strategy of non-local academic librarians referring many library location-based questions back to each user's local library.

Question administration could also be more focused in future studies. If only two or three questions were asked with greater frequency, more robust results could be used to infer statistics to test the assumption that a local librarian is more adept at responding to questions regarding their site. The narrow scope of a few questions, however, may result in fewer practical recommendations. Future studies could also attempt to measure the user's perspective beyond correct and incorrect, such as satisfaction. As a proxy user, I was not satisfied with referrals to my local library through the chat consortium, but the actual service users' perspectives were not measured. An excerpt from content analysis of this chat consortium does indicate some dissatisfaction with the service when a librarian did not answer the user's location-based question, "*I guess this service is not intended for problems like mine*" [2, p. 1600].

#### *A Continuum of Library Local Knowledge*

Many practical implications resulted from a review of the rates of correct response found in the study. Four library subtypes received 100 percent correct responses—*hours, library services, staff contact information, and library location*. *Hours, library services, and staff contact information* may be quickly answered due to some consistent information architecture on academic library

websites, such as direct links to *hours*. *Library locations* like many locations can be found online through web-based mapping applications, such as MapQuest and Google Maps. Sites (i.e., coordinates) are examples of local knowledge readily disseminated online and these question types are easy to answer regardless of the librarian's local knowledge. The key for academic libraries participating in virtual reference consortia is to make all information related to FAQ easily findable by other librarians and users. In fact, the other location-based questions may be made as easy to answer by following a few of the suggestions discussed.

Unlike *library locations*, the question category *find physical items* requires academic librarians to utilize library information systems—although sometimes library specific, an online public access catalog (OPAC) is an OPAC is an OPAC. Therefore, any academic librarian should be comfortable with this consortium's libraries' OPACs. Librarians responded correctly because a librarian does not require any local knowledge and only the tacit knowledge of searching information systems that most librarians retain. This library location-based question subtype was answered correctly 75 percent of the time.

*Inside library location* presents another subtype that received correct responses 75 percent of the time. Users do ask question about their built environments in virtual reference; however, some participating libraries' websites lack online maps of their libraries [2]. To overcome this weakness, all academic libraries participating in virtual reference consortia should provide maps of library interiors or floor plans to enable non-local librarians to help users. Local librarians retain in-depth familiarity with their own library buildings, but for non-



local librarians to serve as if they were local, they require maps. Providing floor plans should also assist users with these types of questions.

For the remaining subtypes, the rate of correct responses dropped significantly with the decrease in the standardization of local knowledge. In anthropology, differences in local knowledge are easily distinguishable between dominant cultures and smaller tribes. Traditional medical practices in Kenya compared to evidenced-based medicine present researchers clear contrasts [35]. In academic libraries, librarians might not think of some circulation policies as evidence of a distinct library culture with its own local customs. This study's results, however, indicate that these local differences are the root of the consortial weakness of location-based questions. The following findings reveal additional suggestions on how non-local academic librarians may learn to serve locals.

Rates of correct responses for *circulation policies* (42.8 percent) indicate that despite being more library-specific, these question types are still findable through most participating library websites. However, these questions are referred at a higher rate than other library-specific questions. Why? One difference is that compared to *hours* that usually have a dedicated link on academic libraries' websites, the placement of circulation policy information varies greatly. This inconsistent placement of these frequently asked questions about policies makes finding local knowledge more time consuming for non-locals. Virtual reference consortia may require participating academic libraries to pass some information architecture test to ensure circulation policies are not buried deep in library websites.

Still, non-local librarians may not feel comfortable responding to questions that relate to another librarian's turf. Although the answer to all the *circulation policy* questions asked in this study were findable, non-locals were not likely to explain how to place a hold on a book to local users. Local knowledge of library policies and procedures relates to each library's unique culture and librarians may be less willing to provide responses when they are not local to the site of a question—even when expected in the shared staffing model of a virtual reference consortium. Another more recent evaluation of this service included focus groups and a survey of librarians that indicated that "users wanted to know local library hours, to renew a book, or to find information about library programs" and the number of these questions and answering them was frustrating for librarians [36].

Based on these results and expressed sentiments, academic libraries participating in virtual reference consortia should provide clear links to their circulation policies. This will allow non-local librarians to assist their users. Regardless, more training is required for all librarians in a consortia to underscore the importance of trying their best to respond to any question asked to the service, not just the "reference" questions, especially considering the frequency with which location-based questions are actually asked.

Non-local academic librarians refer users at even higher rates for help with *log-in* (36.3 percent) and *library card* questions (25.0 percent). While log-in tips exist on some websites, non-local librarians staffing this study's chat consortium often do not retain permissions to reset passwords. Even with this information

findable on library websites, non-local academic librarians often referred the proxy user back to his or her local library. One local librarian was even unable to find information about library cards at their own library. Clearly, log-in and library card help both need to be more prominently displayed on this consortium's libraries' websites.

*Library card* questions most explicitly illustrate the boundary of virtual reference services. Like the other questions, library card issues require local knowledge (i.e., being there to know), but unlike *log-in* and *circulation policies*, a physical element remains for many academic libraries. For example, replacement of a physical card is not possible via the virtual service at present for many of these participating libraries.

Academic libraries could, however, enable non-local academic librarians to authorize and provide users with their library card numbers, reset passwords, and so forth. Why not? In this instance and others discussed, participating academic libraries need to consider how they will assist non-local librarians to be able to function as if they were local and respond to their users' questions. Although many electronic resource license agreements serve as an excuse to limit these functions, when any other librarians staff your reference service and answer your users' questions, why would you not provide them with the tools to help your users?

*Employment* (16.6 percent) questions had the lowest rate of correct responses of all. In this instance, local managers must be contacted for more information. However, one non-local librarian was able to provide the link to

applying for a position at one library. Overall, in many instances non-local librarians can put forth extra effort to answer virtual questions as if they were a local librarian. Many steps suggested here may be taken by academic libraries to allow non-locals to serve as local librarians. Perhaps prior to joining a reference consortium, participating libraries should consider what local knowledge to share and how to display it to make non-local librarians able to serve their users. It is possible that revisiting local knowledge may lead to other improvements in library services.

In response to these results, the chat consortium studied took several steps to attempt to mitigate the weakness. Other virtual reference consortiums may consider similar steps. This consortium:

- (1) created workshops/trainings to reinforce the importance of answering location-based questions beyond your local library;
- (2) built a knowledge base with fields that heavily reflect the types of *library* questions used in this unobtrusive testing; and
- (3) increased marketing, training opportunities, and regular communications to reinforce the importance of the knowledge base when assisting users [35].

The referral issue is not unique to academic librarians or virtual reference. In this study, public librarians referred library-specific location-based questions to local libraries 41.6 percent of the time in content analysis and 52.3 percent in unobtrusive testing. The consortial staff also referred library-specific location-based questions to local libraries 48.9 percent of the time in content analysis and

43.7 percent in unobtrusive testing. These are not far off from academic librarians' referral rates. Undoubtedly, academic libraries participating in virtual reference consortia should make sure that local knowledge to help their users and non-local librarians is findable on their websites.

### *Conclusion*

The inability of academic librarians, both local and non-local, to respond accurately to questions about libraries by referring a considerable number of library-specific location-based questions reinforces this phenomenon as a weakness in virtual reference consortia. More evaluation beyond this exploratory research is needed for a greater understanding of location-based questions.

The assumption that local librarians provide a higher rate of correct responses requires further study to overcome this study's limitations. Irrespective of generalizability, this study's results echo the concerns from earlier unobtrusive testing research in that if location-based questions are not answered correctly then "what degree of accuracy can be expected for questions requiring in-depth analysis...?" [24, p. 70]. In f2f reference, researchers have assumed these types of location-based questions will be easily answered [36]. Certainly, this is not true in all cases. When librarians and users no longer share the same physical space and librarians must address questions from other library cultures, the rate of correct response drops. Unless academic librarians are given the tools to answer them, such as improved dissemination of local knowledge via library websites and

increased training, the weakness will persist and with growth in consortial services, propagate.

As an academic librarian reviewer for the unobtrusive testing questions study stated, "just because I feel that they are reasonable questions for a person using a chat reference service to ask, or even questions that patrons do typically ask, that doesn't mean that I would be able to answer them myself, especially the library-specific ones like checking on holds, or questions about pin numbers. Many (many, many) of those would be answered with a referral to the patron's home library" [35]. Although the user perspective was not studied, one can speculate user concerns are raised when a library service that cannot answer questions about library operations. Users are often unaware of the staffing model of consortial services and only experience the referral, which may be viewed less favorably by users than librarians.

With the necessity to pool resources and services in tough economic times, improving the efficiency and effectiveness of virtual reference services is critical to the success of virtual reference consortia. Enabling non-local academic librarians to more easily locate and access local knowledge will improve these services. As the benefits of virtual reference consortia outweigh any weaknesses, virtual reference consortia will continue to grow in number and participation. Virtual reference librarians require greater access and permissions to each library's local knowledge in order to act as if they are all locals, sitting at a physical desk in all the participating academic libraries at once.



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