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Virtual Question Changes: Reference in Evolving Environments

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Virtual Question Changes: Reference in Evolving Environments

Abstract

- **Purpose**

  As virtual reference and online discovery tools evolve, so do interactions with patrons. This study describes how synchronous virtual reference transactions changed over a six-year period at a university library.

- **Design/methodology/approach**

  Transcripts from October and February from October 2004 to February 2010 were coded for question type, interlibrary loan discussions, and referrals. Subcategories for holding types and referrals were also recorded.

- **Findings**

  The number and types of questions changed with the virtual reference platform used, both increasing and decreasing. The number of questions more than doubled from the beginning to the end of the six year study period. The number of holdings questions at the end of the study period was six times higher than the number at the beginning. Patterns relating to interlibrary loan discussions and referrals were noted.

- **Research limitations / implications**

  The study examined transcripts from one university library. Findings cannot be generalized but provide examples that may be similar in other libraries.

- **Practical implications**

  The number and type of online reference questions that a library receives can change dramatically in a short time. Libraries should monitor question transactions, especially

after software changes. Libraries also should consider how the placement of chat widgets changes the quantity and nature of questions and train staff appropriately.

- **Originality/value**

  This study examines transcripts across a longer time span than previous studies. It is unique in its examination of virtual reference widgets embedded in proprietary databases and link resolvers.

Keywords: Reference Services, Technological change, Content analysis, University Libraries, Library users, Online transaction processing

Paper type: Case study

Introduction

In the last decade, reference librarians have adapted to the rapidly changing online environment by offering virtual reference through a multitude of software products, platforms, and protocols. The authors' library has had four platforms in ten years. The authors have closely participated in these changes and noticed that there seemed to be changes in the way the service was being used by patrons. The service has been studied at several different pivotal points in its history. However, we wondered if we could learn anything new by looking at virtual reference over its lifespan. To get a better understanding of these changes, we examined transcripts across multiple years and different platforms.

Synchronous virtual reference, whether offered via Instant Messaging (IM) or chat software, has become ubiquitous in libraries. In synchronous virtual reference, henceforth referred to as SVR, there is a real-time dialog between the librarian and patron via digital technology. SVR is distinct from asynchronous forms of virtual reference, such as email, because

SVR provides an opportunity for immediate interactivity in the reference interview. In its infancy, SVR services often lived on an "Ask A Librarian" website. SVR was relegated to a specific web location in the same way that in-person reference often is tied to the physical reference desk. The advent of the chat widget, a small piece of code that can put SVR boxes on websites, allowed librarians to place SVR closer to the patrons' point of need. Many libraries have embedded chat widgets in their home pages, library subject guides, and course management systems. Despite the popularity of widgets, many online catalogs, databases and journal platforms do not allow embedded widget code. This may be changing. In 2009, the authors' university library successfully embedded the SVR widget in its SFX link resolver and EBSCOhost databases.

This study of SVR transcripts intentionally uses a longitudinal methodology, analyzing SVR transcripts from October and February over a six year period from 2004 – 2010. Through a multi-year transcript analysis, this study explores patterns in question types and volume. The authors use this approach to investigate the following questions. Have the types of questions changed significantly over time? Does platform choice have an impact on the types of questions being asked and the volume of questions? Does the presence of embedded widgets in proprietary databases change the nature of reference transactions?

Literature Review

There is a large body of literature on virtual reference. Early studies concentrated on software choice, implementation, and staffing models (e.g. Kibbee et al., 2002; Fagan and Calloway, 2001). After implementing the technology, librarians began to examine the transcript dialogues captured by the software. In her article concerning virtual reference assessment, Kern (2006) states, "The most unique, and tantalizing, aspect of evaluation of VR services is the availability

of a transcript of the entire reference interaction." In the face-to-face reference environment, this level of detail would be difficult to obtain without obtrusive observation methods.

To date, there is no agreed-upon question typology developed for the study of SVR transcripts. Researchers have developed multiple methods for classification, which hinders cross-study comparison. In their 2005 overview of email and chat transcript analyses, De Groote et al. (2005, p. 439) list nine studies, each with different classification methods. Theirs is not an exhaustive list; other studies provide additional coding schemes (e.g. Sears, 2001; Arnold and Kaske, 2005; Maximiek et al., 2010).

One of the very first studies to classify questions was conducted by Sears in 2001. Like many later studies, Sears (2001) developed a classification system by modifying or adding to the classic reference categories defined by Katz (1997), which include categories for directional, ready reference, specific search, and research questions. In 2003, Marsteller and Mizzy investigated the efficacy of the reference interview in the chat environment. Their question types included variations on Katz: directional/policy/procedure, Facts/Ready Reference, and Reference. They also added categories for Known Item, Technical Problems, and Librarian Communication (Marsteller and Mizzy, 2003, p. 154). Arnold and Kaske (2005) studied transcripts over a nine-month span using a typology based on Katz and Marsteller and Mizzy. Their typology included definitions for directional, ready reference, specific search, research, policy and procedural, and a category for questions about library holdings. They were interested in seeing what types of questions were being asked in chat, who was asking, and if the answers provided were correct.

Other studies have examined additional aspects of virtual reference transcripts beyond Katz's basic question types. De Grotte et al. (2005) coded transcripts for question type in both

email and chat mediums. They found differences in question type according to the type of patron. Their study is distinctive in that they further subdivided holdings questions into specific formats of materials and qualified questions by subject expertise.

Another aspect that has been examined is the use of referrals. In multi-library collaborative SVR services, referrals may be necessary when librarians from one library cannot answer questions. Kwon (2006) found that approximately 30% of the questions in a collaborative SVR service resulted in referrals, and circulation-related questions accounted for 49% of the referrals. Patrons who received a referral were less satisfied than patrons who received a complete answer but about as satisfied as patrons who received a partial or no answer, and more satisfied than patrons whose interaction had a problematic ending (Kwon, 2006). Even in a single-library SVR service, referrals will still occur, as it is unlikely that every librarian will be able to answer every question.

SVR studies, with a few exceptions, have looked at virtual reference in a snap-shot approach, examining up to one to two years of data. Goda and Bishop (2008) tracked question types for a year and a half to determine how question content changed according to the time of the semester in an academic library. They found that "during the first half of the semester there is a pattern of heavier chat traffic than the second half of the semester" (Goda and Bishop, 2008, p. 313). They also found that policy/procedural questions peak at the beginning of each semester (Goda and Bishop, 2008, p. 308). Several authors provide general histories starting with asynchronous email services and evolving into today's real time messaging services, such as Sloan's (2006) perspective on the first twenty years of virtual reference. Janes (2008) also discusses issues related to digital reference's history, such as scalability, marketing, staff training, and expectations. Both analyses examine virtual reference in broad terms. Profit (2009)

provides details on the history of virtual reference at one university library. He reports that changes in platform impacted usage and that a switch to IM dramatically increased traffic, "surpassing 24/7 chat and e-mail," (Profit, 2009, p. 8). While these articles are valuable, they do not employ a multi-year transcript analysis.

Any historical study of SVR has to account for the technological changes that have occurred. The terms chat and IM are sometimes used interchangeably in the literature for SVR. Here, "chat" is defined as commercially driven software developed for libraries that offer synchronous communication and additional tools such as co-browse. "IM" is a communication tool without the ability to co-browse. Libraries were early adopters of email,chat, and IM software. As IM grew as a social technology, librarians eagerly adopted it. Some used IM in addition to an established chat service (Ward and Kern, 2006). Others replaced their chat service entirely with IM. Houghton and Schmidt analyzed IM versus chat features and concluded that IM was an easy alternative to often clunky chat products (Houghton and Schmidt, 2005).

As the popularity of IM grew among libraries, it became unfeasible to staff all the various iterations of IM clients such as GoogleTalk, AOL, AIM, MSN, Yahoo, etc. Multi-protocol IM programs such as Trillian, Pidgin, and Meebo gained favor because they allowed librarians to monitor several IM services simultaneously. Meebo was especially attractive as it gave librarians the ability to add IM widgets to web pages with minimal programming knowledge. IM widgets also eliminated the requirement for the end user to have a pre-existing IM client. Meier (2008) provides a good explanation of the various types of widgets and possible service configurations for librarians to consider.

Increases in SVR traffic at several libraries have been attributed to the increased visibility and accessibility of IM widgets. An example is the increase (49%) at California State University

Fullerton, where they added a MeeboMe widget to their "Ask a librarian" website and created a linked icon on desktops in the library's information commons (Breitback et al., 2009, p. 93). Bedwell, et al. (2008) also describe the increases in reference traffic in the Novanet Live Help consortia where embedded widgets were added to local library contact pages and a linked logo was placed in the shared OPAC. Interestingly, they compared IM and their commercial SVR product and found little difference in question type but an expressed preference for using IM. They concluded, "The universality of the chat widget obviates any need for additional chat software to serve patrons who do not use IM" (Bedwell et al., 2008, p. 13).

A library's website and its OPAC are not the only places where patrons may need assistance. OpenURL link resolvers such as SFX have been around since the early 2000s as a means to help patrons connect from citation-only indexes to full-text access or interlibrary loan options. Although intended to facilitate patron self-service, patrons can have difficulty following the paths that libraries provide with these tools. Wakimoto et al. (2006, p. 129) conducted an end-user survey and found half of respondents said that SFX did not meet their needs, and, "49 percent expressed disappointment at not finding full text online for their citations." Even though a link to interlibrary loan was provided when full text was not available, only eight percent actually clicked on the interlibrary loan option (Wakimoto et al., 2006, p. 132). A similar survey study of interlibrary loan use and OpenURL linking at Minnesota State University, Mankato found that students used the interlibrary link in the OpenURL citation, but "…most students who needed interlibrary loan assistance said they received help from a librarian (47%)" (Frank and Bothmann, 2007, p. 40).

The current study analyzes transcripts from both chat and IM platforms, including a move to IM widgets. Notably, it also may be the first to examine transcripts from IM widgets

embedded in proprietary sources (i.e. EBSCOhost and SFX), a reasonable extension of the concept of reference at the point of need. This study documents changes in the number of questions, question types, interlibrary loan discussions, and referrals in SVR transcripts relative to the timing of platform changes and embedded widgets. The changes in SVR platforms and the use of embedded widgets occurred in the context of multiple changes within and outside the library.

Background

Southern Illinois University Carbondale's Morris Library is approaching its ten year anniversary of SVR services. There have been many changes in just the last six years. The library's SVR began with a homegrown product developed in 2001 (Fagan and Calloway, 2001). Due to attrition of software support, a need for additional features and changes in technology, the library has changed SVR platforms four times. Below is a list of the SVR products used and their lifespans at the library.

- Morris Messenger (homegrown): June 2001 - June 2005
- Docutek VRLplus: June 2005 - March 2007
- Meebo: January 2007 - August 2010
- LibraryH3lp: August 2010 - present

Morris Library's SVR service also underwent changes in service hours and staffing, starting with just a few hours per day during the pilot project phase. After the initial pilot, more service hours were added and the service was staffed by professional librarians and paraprofessional library assistants. As the service continued to expand, professional librarians took on more of the hours from their offices, but paraprofessionals continued to provide some service when necessary. For simplicity, the library employee responding to the patron is referred

to as a librarian throughout this article. By fall 2005, the library was offering 29 hours of service per week, from noon to 4:00 p.m. on weekdays and 6:00 – 9:00 p.m. Monday through Wednesday. This approximate schedule was maintained until the summer of 2007, when all reference staff began staffing Meebo, and the hours of service expanded to approximately 53 hours per week, 10:00 a.m. – 11:00 p.m. Monday through Thursday and 10:00 a.m. to 9:00 p.m. on Fridays. This schedule continued until present day, with the exception that the service began closing at 4:00 p.m. on Fridays beginning in spring 2008 due to staffing constraints.

During the six year study period there were significant changes in the way the library provided online access to library resources. The library implemented SerialSolutions' Article Linker in the fall of 2004 and switched to SFX in spring of 2006. The library took advantage of OpenURL linking in Google Scholar beginning in 2005, but usage statistics were not gathered until March of 2006 when SFX was implemented. Usage reports from SFX show that the library's use of SFX via Google increased quickly from 496 in the first month to 3,419 in October of 2009. By 2008, Google Scholar was one of the library's top three sources of traffic through SFX, along with the library's electronic journal finder and all EBSCOhost databases. A link to the library's SVR service was included in the SFX menu options during most of this period, but the library did not embed the Meebo widget directly into the SFX screen until June 2009. In February of 2009, the library embedded a search box on its website that searched multiple EBSCOhost databases concurrently. In February 2010 the SVR widget was embedded in all EBSCOhost databases. The Virtual Reference Coordinator is exploring other platforms that will allow for integration of localized library help services, including the addition of an SVR widget to the library catalog.

In addition to changes in the online environment, the library's physical space experienced dramatic transformations. Beginning in the summer of 2005, the library undertook a multi-year renovation that required the demolition of the library, floor by floor. Reference services remained in the building throughout the project but often took place adjacent to construction zones. The Information Desk was moved to three different locations, as new spaces were renovated. Library materials were spread out, both on campus and in off-site storage. SVR services were an important link to patrons during the upheaval of the renovation. Figure 1 provides a timeline highlighting major changes in the library.

Figure 1: Timeline of changes at Morris Library during study period

[Insert Figure 1]

The total number of all reference transactions changed over the six year study period, as did the number of SVR questions. The percentage of SVR transactions relative to the total number of reference questions gives a clearer picture of the growth of SVR, as shown in Table I.

Table I: SVR as a fraction of all reference questions at Morris Library

Fiscal Year (June 30-July1)	Total # of Reference Questions (including SVR)	# of SVR Questions	SVR as % of Total
2004 - 2005	63,367	1,779	2.8%
2005 - 2006	48,909	219	0.4%
2006 - 2007	33,448	583	1.7%
2007 - 2008	25,291	1,832	7.2%
2008 - 2009	28,266	2,011	7.1%
2009 - 2010	42,813	3,087	7.2%

Methodology

Transcript Collection

Permission was obtained from the SIUC Human Subjects Committee to examine Morris Library's SVR transcripts. Even though SVR service started in 2001, transcripts prior to 2004 were not readily available. Therefore, transactions from the months of October and February of each year from October 2004 to February 2010 were coded. These two months were chosen as representative months in the academic calendar which did not include any extended university breaks.

Consistency in transcript archiving can sometimes be difficult to maintain because each SVR platform has its own method for archiving, a problem explored by Graves and Desai (2007). For this study, the authors pulled transcripts from multiple formats. Transcripts from the library's homegrown SVR service, Morris Messenger, and Docutek VRLplus were exported from separate databases into Microsoft Word for coding. Meebo transcripts were stored in the library's RefTracker system and exported into an Excel spreadsheet for coding.

Transcripts were numbered. Each researcher was responsible for coding half of the transcripts on a random-order list. The coded data, which contained no identifying information about the patron or librarian, was entered into a spreadsheet using a Google Documents form and exported to SPSS 16.0 for analysis. Chi-square tests for goodness of fit with an alpha level of .05 were used in tests to determine statistical significance.

Codeable Transcripts

Only transcripts in which the patron asked a question and the librarian offered some sort of response were coded. Of the 2,577 transcripts that were compiled, 686 (27%) were dropped from

the data because they lacked enough information to code. This left 1,891 transcripts in the analysis.

The large fraction of transcripts dropped from the data was due to issues in the homegrown Morris Messenger platform. Transcripts from October 2004 and February 2005, when Morris Messenger was used, accounted for 523 (76%) of the dropped transcripts. Of the transcripts from these two months, about two thirds (68%) were dropped from the data. As noted by Fagan and Desai (2003, p. 172), Morris Messenger was available during limited hours, and patrons would receive busy signals if the librarian was working with another patron, missing as many as 3 patrons per hour. In addition, patrons often treated the SVR window as a site-search box rather than an IM box. Those who mistook it for a search box engaged with a librarian in less than half of the cases (Fagan and Desai, 2003, p. 179).

The most common reason for excluding a transcript was missed questions; 463 questions were dropped for non-response from the librarian. The next most common reason was patron disappearance; 123 transcripts were dropped for this reason. In these transactions, the initial query was the only statement by the patron, and the librarian did not provide any direct answer to the question. See the following example:

Patron: Diplomacy

Librarian: Good afternoon. What would you like to know about diplomacy?

By contrast, brief transactions in which the patron's question was followed by a librarian answer were kept. For example, the following transaction was considered complete and was coded.

Patron: What are the hours for the reserve desk?

Librarian: Reserves is open until the library closes, at midnight

Additional transactions that were dropped included test questions (80 transcripts), librarian communication with each other (8 transcripts), duplicate questions that were inadvertently logged twice (6 transcripts), and other questions that lacked enough information to be coded (6 transcripts).

Transcript Coding Scheme

Transcripts were coded in several areas, including question type. The question types were assigned codes similar to the coding scheme used by Arnold and Kaske (2005). Questions were coded as one of the following: directional, ready reference, specific search and research, policy and procedural, or holdings/do you own.

Unlike Arnold and Kaske's coding scheme, our coding system collapsed specific search and research into a single category. Whereas the specific search category encompasses questions regarding a particular topic, the research question may not be completely formulated until after the search begins. Katz (1997, p. 17) suggests that almost any specific search question may become a research question. Coders in this study had difficulty distinguishing between specific search and research questions during practice coding. Moreover, research questions accounted for a tiny percentage of the practice cases coded and were just three percent of Arnold and Kaske's (2005) questions. The current study also departed from Arnold and Kaske (2005) in that each transcript was assigned only one question type, even if multiple questions occurred in a single transcript. If there were multiple questions within a single transcript, coders assigned a single question type based on their perception of the dominant question.

Coding rules were created for areas that proved difficult to code during practice coding. Questions about where to find things on the library's website were coded as directional questions because they involved finding locations in the virtual environment. Computer or technical

support questions, including questions about how to use a particular database, were coded as policy and procedural questions based on Arnold and Kaske's (2005, p. 180) statement, "Most of these questions begin with, 'How do I?'"

Questions coded as "holdings / do you own" were further coded by material type. These categories were developed by examining a subset of transcripts from March 2010 and included the following types: book, book chapter or conference proceeding volume, journal (or other periodical) article or conference paper, journal (or other periodical) but not a specific article, dissertation or thesis, database, general holdings question (e.g. Do you have audio books? Do you have children's books?), and other formats. If a patron asked about multiple formats, questions were categorized for the dominant holdings category.

In addition, transcripts were coded to indicate if interlibrary loan was discussed, and if so, whether the librarian or the patron was the first to mention it. Morris Library offered two different interlibrary borrowing systems, and a mention of either was coded as an interlibrary loan discussion. Transcripts that mentioned interlibrary loan processes without naming a particular system also were counted.

Finally, every transcript was coded for whether a referral occurred, using the following definition, "Library referral is an act by library employees of responding to individuals' needs by directing these individuals to another person, or to a place under the control of another person, for the fulfillment of these needs," (Hawley, 1987, p. 23). Referrals to other persons or units were counted even if the librarian also provided a complete answer to the question. This coding departs from Kwon (2006), who did not code questions with complete answers as referrals. Referral categories were established by examining transcripts from March 2010. The categories included the following: circulation department or staff, interlibrary loan department or staff,

information desk or help desk within the library, specialist librarian, another person or office within the library, university faculty member outside the library, university department or office, and person or office outside the university. If the librarian referred the patron to more than one person or place, multiple referral types were noted.

Coding Reliability

Transactions from March 2010 were used as training data to refine the coding scheme and to practice coding. The investigators jointly coded 53 transactions and then independently coded fifty more. After that, the investigators discussed transactions in which their coding disagreed and refined the definitions of some categories. The investigators then independently coded two more sets of fifty training cases until they were convinced that they were in sufficient agreement.

To assess inter-rater reliability, ten percent of the transcripts from the initial pool of 2,577 questions were randomly selected to be coded by both investigators. Incomplete transcripts dropped from the data set also were dropped from the reliability assessment, leaving 194 transactions to be assessed for reliability. Cohen's kappa was used to assess inter-rater reliability, with a cutoff value of 0.7 to be considered acceptable. All four of the coding areas had a value for Cohen's kappa greater than 0.7. The coding for question type had 82% agreement and a kappa of 0.76. The coding for holdings questions had 89% agreement and a kappa of 0.74. The coding for interlibrary loan had 94% agreement and a kappa of 0.81. The coding for referral had 91% agreement and a kappa of 0.78.

Results

Number of Questions

Morris Library experienced significant changes in the total number of SVR questions, sometimes within a single year, as shown in Figure 2. There were both dramatic increases and decreases.

For example, the number of SVR questions received in October 2005 was 47% lower than the number received in February 2005. Conversely, the number of SVR questions received in October 2007 was more than double the number received in February 2007. Similarly, in February 2010 the number of questions received was 50% higher than in October 2009.

Figure 2: Number of questions received over time

[Insert Figure 2]

Types of Questions

Policy/Procedural accounted for 726 (38%) of questions coded, making it the most frequent question type. Holdings questions and specific search / research questions each accounted for 24% of the questions, with 454 and 453 respectively. There were 140 (7%) ready reference questions and 118 (6%) directional questions.

As shown in Figure 3, the frequency of the different question types changed over time as the total number of questions fluctuated. However, as shown in Figure 4, different question types changed at different rates. The proportion of questions in each type did not stay the same across the study period. This change was statistically significant, χ^2 (44, N = 1891) = 180.7, $p < .001$. The number of holdings / do you own questions sextupled from 19 in October 2004 to 121 in February 2010, and increased from 14% to 33% of the questions received those months. The number of policy and procedural questions more than quadrupled from 30 in October 2004 to 125 in February 2010. They grew from 21% of the questions in February 2004 to a peak of 50% of the questions in February 2007, and were 34% of the questions in February 2010. The number of specific search and research questions increased from 61 in October 2004 to 73 February 2010. Because the increase in holdings and policy and procedural questions were so dramatic, the percentage of specific search and research questions actually dropped from 44% in October

2004 to 20% in February 2010. The number of directional questions and ready reference questions remained relatively stable between October 2004 and February 2010, and these two question types slightly declined as a percentage of all SVR questions.

Figure 3: Number of questions of different types received over time

[Insert Figure 3]

Figure 4: Percent of questions of different types received over time

[Insert Figure 4]

Holdings Questions

The increase in questions about the library's holdings was not consistent across all types of materials. As shown in Figure 5, the growth in holdings questions that began in October 2006 included several material types. However, in 2009 there was a pronounced spike in the number of questions about journal articles. The number of holdings questions about whether the library had specific journal articles grew from 21 in October 2008 to 33 in October 2009 and 62 in February 2010.

Figure 5: Type of holdings questions over time

[Insert Figure 5]

Interlibrary Loan Discussions

Interlibrary loan was mentioned in 304 (16.1%) of the transcripts. Librarians initiated 189 (62%) of the interlibrary loan discussions and patrons began 115 (38%) of the interlibrary loan discussions. There was a difference in the proportion of librarian-initiated and patron initiated interlibrary loan discussions among the question types. This difference was statistically significant, χ^2 (8, N = 1891) = 292.1, $p < .001$. Librarians brought up interlibrary loan for 124

(27.3%) of the questions about library holdings but in less than seven percent of any other question type. In all, holdings questions accounted for 66% of the librarian-initiated interlibrary loan discussions and 148 or 49% of all interlibrary loan discussions. Patrons brought up interlibrary loan in 87 (12%) of the policy and procedural questions but in less than six percent of any of the other question types. In all, policy questions accounted for 76% of the patron-initiated interlibrary loan discussions and 131 or 43% of all interlibrary loan discussions.

The number of transcripts in October 2009 and February 2010 that included an interlibrary loan discussion was more than four and a half times the number in any of the months from October 2004 to February 2007. As a percentage of all SVR questions, it also increased, but not nearly as substantially as the number, as illustrated in Figure 6.

Figure 6: Number and percentage of interlibrary loan (ILL) discussions over time

[Insert Figure 6]

Referrals

Librarians made referrals in 542 (29%) of the transcripts. Sometimes librarians referred a patron to more than one person or place, so there were 576 referrals total. The number of referrals grew as the number of questions grew. February 2006 had the fewest referrals of the study period with 14, and February 2010 had the highest with 94.

There was a difference among the different question types in the rate of referrals, as demonstrated by a chi-square test, χ^2 (4, N = 1891) = 70.47, $p < .001$. Referrals were made for 39% of the policy and procedural questions, for 25% of the ready reference questions, for 24% of the specific search and research questions, for 20% of the holdings / do you own questions, and for 17% of the directional questions.

The distribution of the types of referrals is shown in Table II. Patrons were referred most often to the Circulation Department or its staff, accounting for 29% of the referrals. Of the 168 referrals to the Circulation Department, 143 were policy and procedural questions.

Table II: Number of referrals made to different people or places

Referred to	Number of Transcripts*	Percent of Referrals	Percent of All Transcripts
Circulation	168	29%	8.9%
Specialist Librarian	116	20%	6.1%
Information or Help Desk	98	17%	5.2%
Interlibrary Loan Department or Staff	42	7%	2.2%
Other within Morris Library	69	12%	3.6%
University Office or Department Outside the Library	44	8%	2.3%
Non-University Resource	27	5%	1.4%
Faculty	12	2%	0.6%

** The number of transcripts with referrals was 542, but the total indicated here is 576 because a patron could be referred to more than one person or place.*

Discussion

Despite fluctuations in the number of SVR questions received, the service has experienced overall growth in the six year study period from 2.8% to 7.2% of total reference transactions. Similar growth has been reported by other libraries (Goda and Bishop, 2008). Face-to-face reference may be decreasing (Kyrillidou and Bland, 2009), but virtual transactions are growing in number and frequency.

In this study, changes in the number of questions corresponded to changes in SVR systems. Overall, the number of transactions was lowest when the library used the VRLplus platform, highest when the library used Meebo, and at an intermediate value when the library used the homegrown platform.

Because there were so many changes occurring within and outside the library during the study period, it is not possible to be certain that changes to the SVR system were the sole cause for fluctuations in the number of questions. One might expect increased use of virtual reference services during the library renovation period beginning in 2005, when the physical facility was largely inaccessible and inhospitable. On the other hand, this disruption may have caused some patrons to abandon library services, including SVR. During the renovation period, overall reference statistics did decrease. It should be noted, however, that the number of questions received via VRLplus dropped disproportionately compared to the total number of reference transactions, down to 0.4% during the full year that VRLplus was used. This represents the lowest rate of SVR usage that the library has ever documented.

Low usage was the primary deciding factor in the switch to a Meebo widget on the library's Ask A Librarian website in 2007. With this change, the number of SVR questions received increased dramatically in one year, from 583 in fiscal year 2006-2007 (1.7% of all reference questions) to 1832 in fiscal year 2007-2008 (7.2% of all references questions). This increase occurred even though the building was still under construction for both years. Additional hours of SVR service were added in May of 2007, so the increase could also be attributed to more hours of service. However, while the number of service hours did not quite double, the number of questions more than tripled, outstripping the level of change expected

from the increase in service hours. Overall, the remarkable increase in usage supports the notion that the choice of interface does affect usage.

The number of SVR questions increased by another 1,000 in the year when the library embedded a widget into the SFX link resolver menu and EBSCOhost databases. Even though the Ask A Librarian link had been included in the SFX menu and the EBSCOhost banner for many years, an increase was recorded only after the widget was embedded. The increase in SVR questions supports the notion that placement of a widget can influence use. While the total number of SVR questions increased when the widget was added to SFX and EBSCOhost, so did the total number of reference questions at the library. The library experienced a resurgence in reference traffic after the renovated building opened. As a result, the overall percentage of SVR questions remained consistent at just above 7%.

Most interesting are the differences in question type that occurred during the six years studied. The total number of holdings questions grew by 500%. When viewed proportionally, holdings questions went from one sixth to one third of the questions. The proportional increase is first evident after February 2008. It should also be noted that types of holdings questions also changed, with a substantial increase in questions about articles after February 2009. This increase coincides with the period after the SVR widget was embedded into SFX, EBSCOhost databases, and the library implemented the EBSCOhost one search box. Although the causal relationship is not certain, the authors are confident in suggesting that the embedded widgets have made a difference in the types of questions being asked and that further study is warranted.

These results of this study may indicate that the type of SVR platform has an impact on question type. The ease of access which is provided by SVR widgets and IM may encourage more policy and procedural questions. In the current study, policy and procedural questions

increased in both the raw number of questions and as a percentage of SVR questions. The idea that SVR platform may encourage or discourage specific patron behavior is not a new idea. Rourke and Lupien (2010, p. 67) used a similar question typology in their study and found that questions asked in Docutek were more apt "to be more research intensive" and that "patrons use IM to ask fewer information-seeking questions and more of the other types of questions." The ease of access provided by SVR widgets may encourage more policy and procedural questions.

Differences in interface, such as embedding, could be one of many causes that explain the differences in question types reported by other libraries. Among studies that used coding schemes similar to this study, the proportions of questions in different categories have ranged widely. Sears classified four months of transcripts and found that over half the questions were reference inquiries and a third were policy and procedural questions (Sears, 2001). For Marsteller and Mizzy (2003, p. 156), when interactions for technical problems and librarian communication were removed, directional/policy questions made up the most questions with 34%, followed by known item with 28%, and ready reference and reference with 19% each. In the study by Arnold and Kaske (2005, p. 182), policy/procedural questions were the most common at 41%, with specific-search second at 20% and holdings question at 16% (Arnold and Kaske, 2005, p. 182). In the study by De Groote et al. (2005, p. 450), "Over a quarter of all queries were for holdings information and 15 percent related to library policies or services." In the current study, there were months in which the pattern of question types was similar to any of the above studies.

In this study, referring URLs could not be collected, so the authors could not verify whether the placement of widgets in SFX and EBSCOhost was encouraging patrons to inquire about specific holdings. This increase would seem logical, however, since patrons typically use

both SFX and EBSCOhost for article discovery. The increase in holdings questions may also have been driven by other environmental changes, such as increased use of Google Scholar as a starting point for research. SFX usage reports show a dramatic increase in the use of Google-based requests during the study period. The increase in holdings questions may indicate that patrons are able to find citations independently in Google Scholar but do not understand the nuances of accessing proprietary information. When it comes to scholarly information, discovery is only the first step, with access being an additional hurdle. In a discussion about Google resources, Buczynski (2008, p. 382) notes that "…we are able to find more than ever before but can only access a smaller and smaller percentage of what we know is out there." He goes on to posit that the decline in reference service use illustrates patrons' desire for immediacy and self-service (Buczynski, 2008, p. 383). The results from the current study suggest that patrons will use reference services if they are embedded into the spaces where they are discovering sources.

This increase in holdings queries found in this study may point to the shortcomings of database interfaces and article linkers, but holdings questions may also mask the patron's underlying need. Is the patron's real need to find a known item, or is it to access research on a specific topic? If the patron's underlying need is for topical information, but they have entered into a reference transaction by asking to access a known item, there is a unique opportunity for the librarian. Through a reference interview, librarians may be able to glean the topical question from patrons and refer them to additional resources. This phenomenon is not unique to virtual reference. Even before the advent of link resolvers, Katz (1997, p. 15) noted that known-item requests were often an opportunity for extended reference transactions:

> *All this leads most experienced reference librarians to qualify the "known-item" type of question. The assumption made by the librarian is usually correct, and the*

user really needs more information or help than indicated. Therefore, librarians tend to ask enough questions to clarify the real needs of the user rather than accept what may be only a weak signal for help.

Reference librarians may be able to direct patrons to a known item, but they may also be able find resources that the patron never considered. This is a true extension of reference in the digital environment and a case for embedded SVR reference. If the librarian simply directs the patron to the specific holding or interlibrary loan, there is a missed opportunity for enhanced service and the librarian becomes merely a human equivalent of a link resolver.

The current study did not record information regarding the thoroughness of the reference interview or its relationship to holdings questions and embedded widgets. Future research, which includes the referring URL of embedded widgets and examines the reference interview more closely, could test these hypotheses.

The number of transcripts that included mention of interlibrary loan increased substantially from the beginning to the end of the study period. Nearly two thirds of the librarian-initiated discussions of interlibrary loan were coded as holdings questions, and as holdings questions increased, so did interlibrary loan discussions. It should be noted that despite the increase in interlibrary loan discussions, they were still very few compared to the tens of thousands of interlibrary loan transactions processed by the libraries on campus each year (Kyrillidou and Bland, 2009, p. 61).

The goal of serving users "where they are" is laudable, but should be considered in concert with expectations for service. Referrals occurred in 29% of transactions, indicating that Morris Library's librarians do not have the resources necessary to address all service expectations. For example, referrals to the circulation department were the most common type.

Reference librarians at Morris Library do not have access to circulation and interlibrary loan systems, so they cannot answer questions about patrons' individual accounts. Kwon (2006) noted a similar issue when a link to reference services was included on a circulation page, writing, "Whenever patrons encountered a circulation-related problem, they seemed to click on the link to get help. However, a large proportion of these circulation-related questions were answerable only by authorized personnel in the patrons' home libraries." The high number of referrals may indicate that librarians need cross-training in the circulation client or that the SVR system should allow easy transfer of questions to circulation staff. If neither option is feasible, the library may consider removing the Ask a Librarian link from some web pages.

Conclusion

The results of this study are specific to one university library and cannot be generalized. However, the findings may be helpful as other libraries consider SVR platforms, service configurations, training, and staffing. Results also indicate that there is a need for continued research as reference continues to evolve and librarians explore new mediums and modalities for reaching patrons. Even though SVR grew in the later stages of this study, it has never accounted for more than 7.2% of all reference questions at the library. SVR transcripts are easily studied, but reference managers should take care to approach reference services holistically. Just as the placement of SVR widgets seems to have an impact on virtual reference traffic, so too might the placement of face-to-face reference service points.

Virtual reference has undergone significant change in the past decade. This study illustrates that regular monitoring and assessment is important for the continued success of SVR at our university library. Any change in platform, such as extending SVR to mobile devices, should be monitored carefully. Transcripts should be watched not just for technical difficulties or

changes in the number of questions, but also for differences in question content. Staff training should be adjusted to meet new variations in question content. Librarians need to pay particular attention to questions that appear to be about policy or holdings because they may not be reflective of the patron's true need. Virtual reference coordinators need to be acutely aware of what skills staff need to successfully answer questions in the digital environment and verify that staff are conducting complete reference interviews. As a result of this study, the authors plan to hold refresher sessions on reference interview skills in the virtual environment, especially as they pertain to holdings questions.

It is noteworthy that the number of holdings questions increased dramatically when the library embedded the SVR widget in proprietary sources. At the same time, the use of Google Scholar to connect to the library's link resolver also increased dramatically. The authors are particularly curious to discover if the placement of an embedded chat widget in a database or link resolver has a causal relationship with known-item requests. The change to the LibraryH3lp platform means future transcripts can be studied for referring URL, thus proving a way to better investigate this relationship at Morris Library. Results from transcripts analysis also show that the number of interlibrary loan discussion initiated by librarians rose as the number of holdings questions increased. Are interlibrary loan discussions a response to needs that are unfulfilled by the local collection or are they the result of an incomplete reference interview? The authors plan a more thorough analysis of the reference interaction to illuminate this question.

More changes in virtual reference are sure to come. This study examines the use of an embedded widget in proprietary sources, a trend that is likely to increase. Embedded widgets give patrons the ability to access local assistance without having to navigate away from the searching process. Morris Library embedded links to our reference website in proprietary sources

several years ago, but it was only when the widget was embedded within the databases that we experienced a surge in traffic. The authors believe that embedding SVR widgets into proprietary resources is a natural extension of reference at the point of need. It deserves more consideration from database vendors. We will continue to embed our widget in research databases and encourage vendors to make local SVR available. Ideally, it would be as easy to add an SVR widget to a subscription database as it is to add a widget to a library's website.

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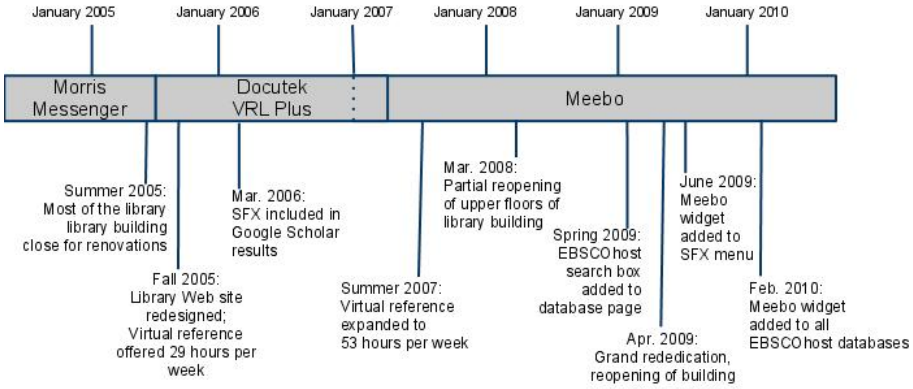
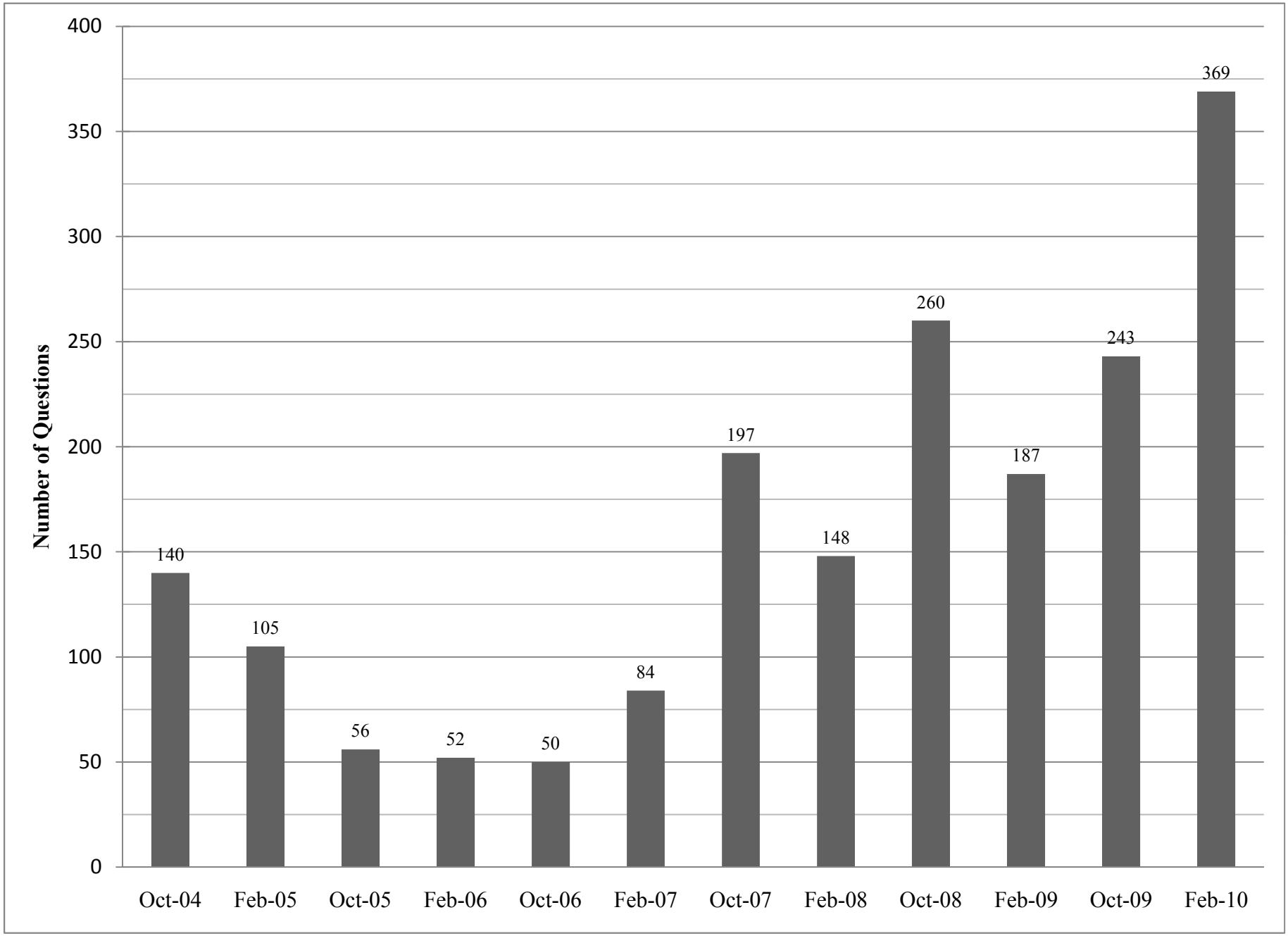

January 2005
January 2006
January 2007
January 2008
January 2009
January 2010
Morris Messenger
Docutek VRL Plus
Meebo
Summer 2005: Most of the library library building close for renovations
Fall 2005: Library Web site redesigned; Virtual reference offered 29 hours per week
Mar. 2006: SFX included in Google Scholar results
Summer 2007: Virtual reference expanded to 53 hours per week
Mar. 2008: Partial reopening of upper floors of library building
Spring 2009: EBSCOhost search box added to database page
Apr. 2009: Grand rededication, reopening of building
June 2009: Meebo widget added to SFX menu
Feb. 2010: Meebo widget added to all EBSCOhost databases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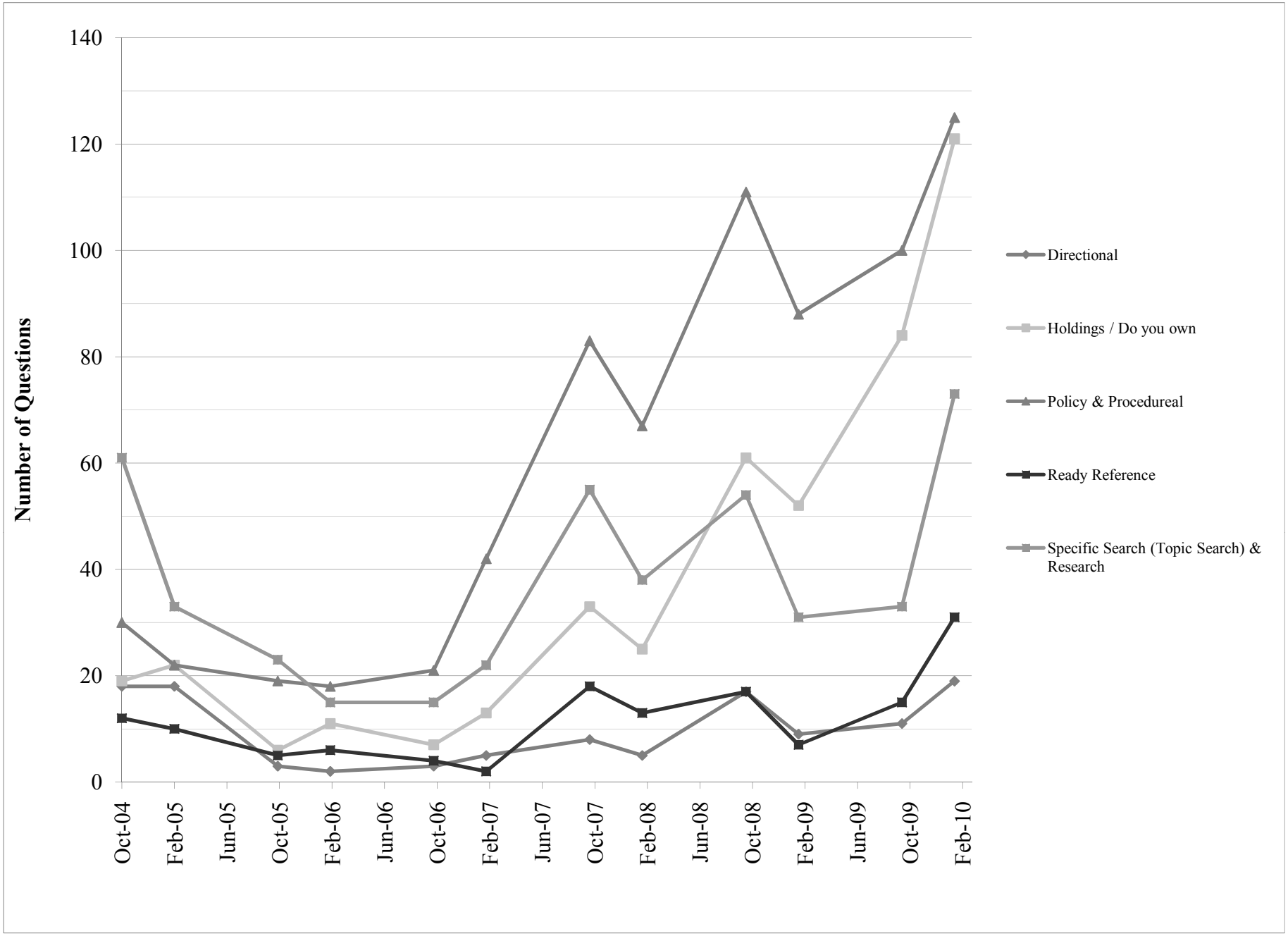
Oct-09
Feb-10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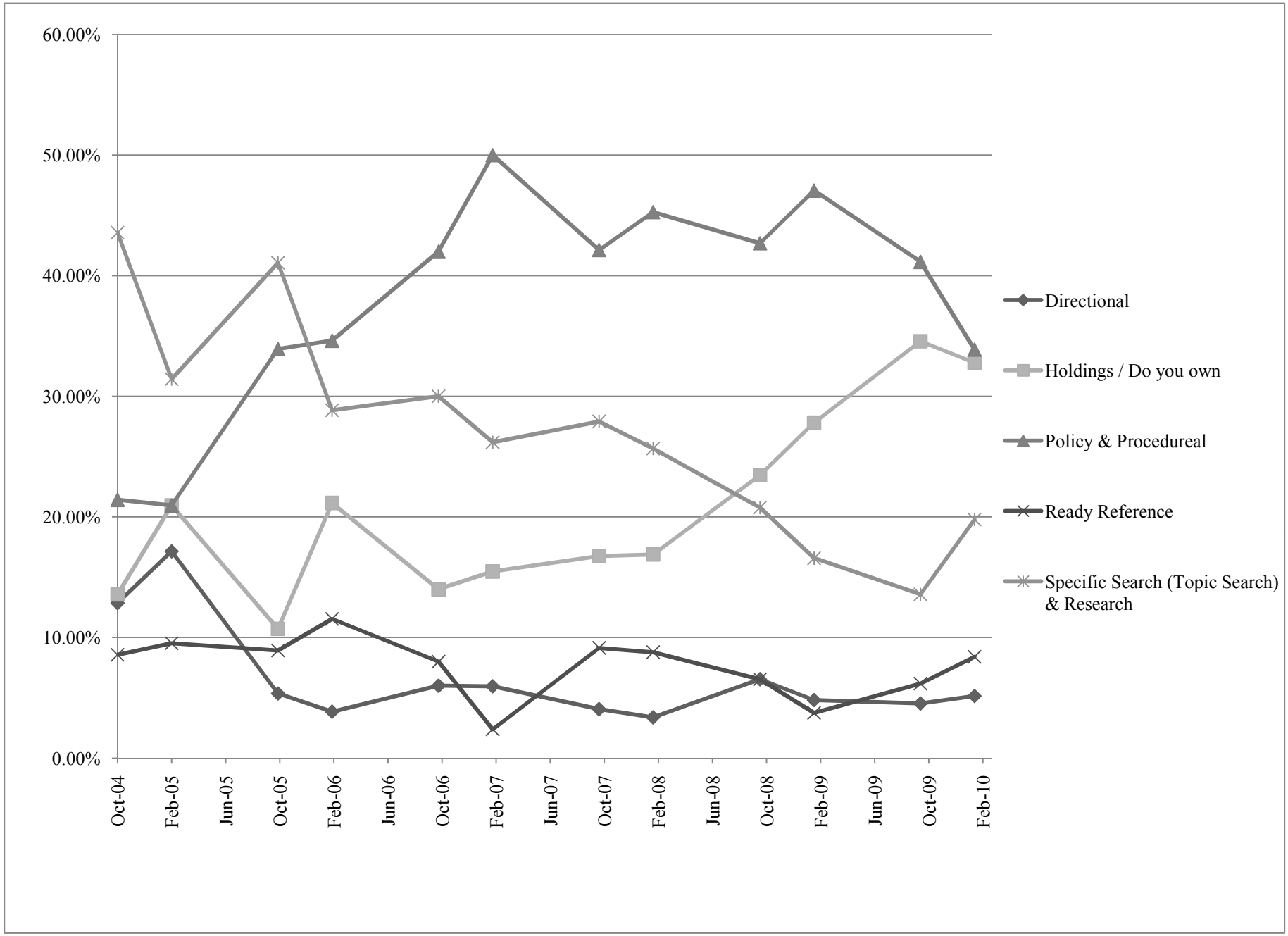
Directional
Holdings / Do you own
Policy & Procedureal
Ready Reference
Specific Search (Topic Search) & Research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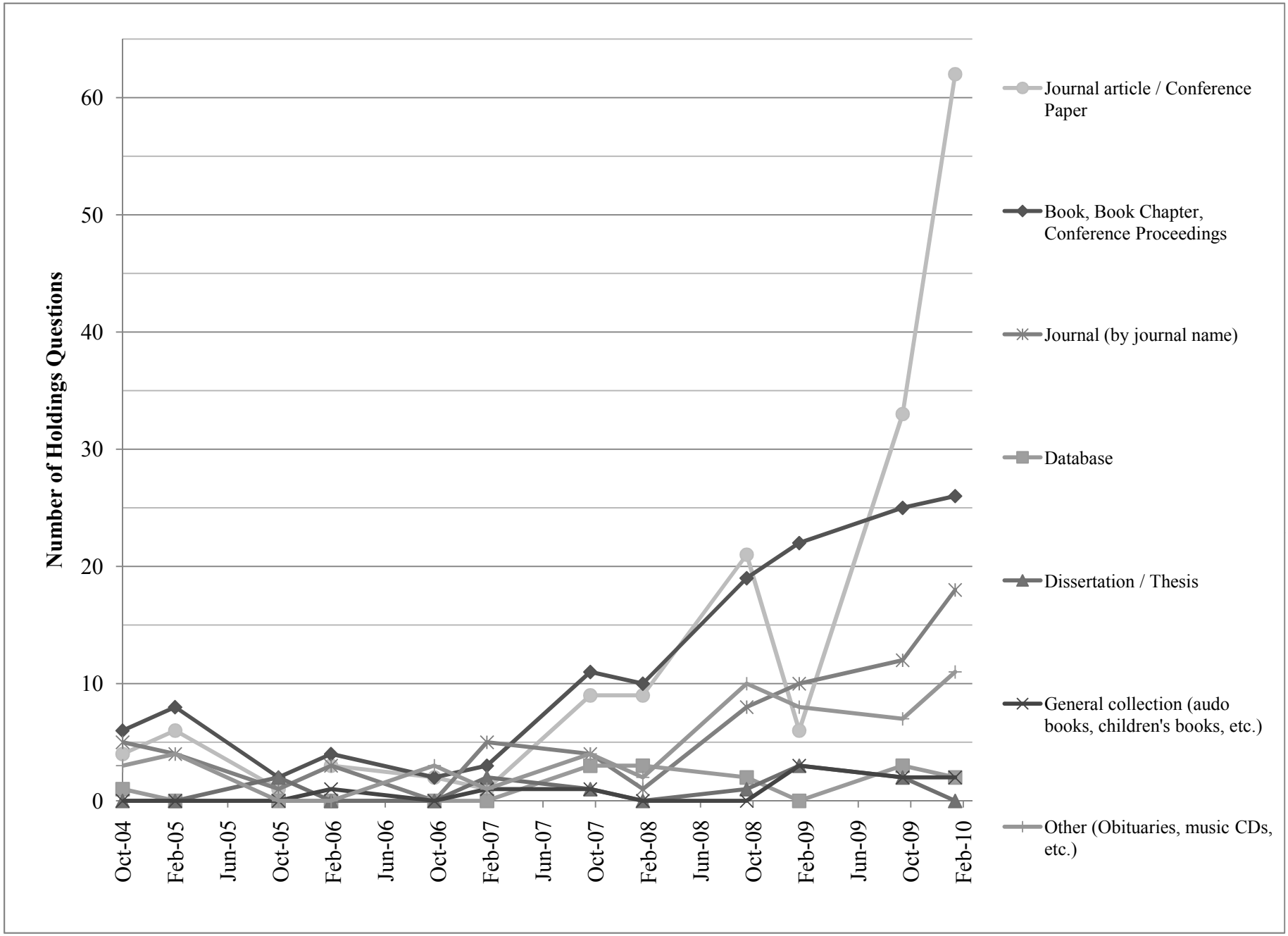
Directional
Holdings / Do you own
Policy & Procedureal
Ready Reference
Specific Search (Topic Search) & Research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Journal article / Conference Paper
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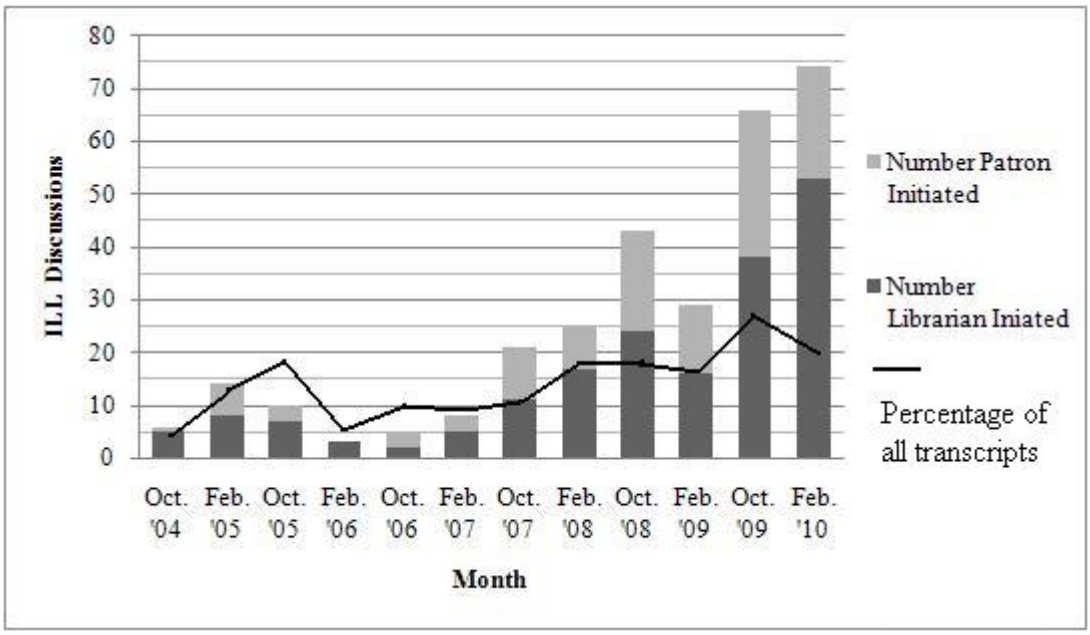
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Oct. '08
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Oct. '09
Feb. '10
Month
Number Patron Initiated
Number Librarian Iniated
Percentage of all transcripts

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