
This paper is an analysis of the types of questions that were asked through the chat reference services at Duke University, the University of North Carolina Chapel Hill, and North Carolina State University during the month of November 2002. The questions were categorized and were examined to see if there were any trends that could be observed and if it would be feasible to create a consortium to answer chat questions for all three schools.

A major result of this research showed that most of the questions that were asked could be answered using the resources found in any of the libraries. The categories that were created to organize the questions could be used at all of the universities equally well.

Headings:

College and university libraries – Reference Services

Reference services – North Carolina

Academic libraries – Reference Services

Electronic reference services

Reference services – Automation
QUESTIONING CHAT:
A STUDY OF THE TYPES OF QUESTIONS ASKED THROUGH CHAT REFERENCE.

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Introduction

“Where’s the bathroom?” “Excuse me, could you please show me where I can get some information and statistics about Peruvian radio stations, and the advertising revenue that they receive?” At the reference desk these questions, and many more like them, are heard every day. Librarians have been answering questions like these since the later part of the nineteenth century (Bopp & Smith, 2001 p.4). As technology has changed the reference department has changed to incorporate its use in fulfilling its mission. Today questions can come to the reference desk through many different sources, including, patrons walking up to the reference desk, patrons calling on the phone, and patrons sending e-mail. There is now another method of asking a reference question, “chat” reference.

Put simply, chat reference is a service that allows the patron to type a question that is being sent immediately to the reference department and have it answered by a librarian in real-time. Chat, like email and the telephone, allows the patron a level of anonymity. Unlike the phone, chat provides a written response that reduces the chance that the user may commit a transcription error or misunderstand the librarian’s response. Unlike email, the patron and the reference librarian can have a reference interview in real time that can focus the patron’s question, which allows more useful information to be delivered.
In order to properly staff the reference desk it is necessary to keep statistics on the various questions that are asked. This ensures that there are enough librarians to answer questions during peak times and that the desk is staffed when the patrons are able to use it. It is helpful to put the questions that are asked into categories in order to better interpret trends that are occurring. This holds true for chat reference as well. It is important to note trends, and especially the times that the service is most active, in order to have it work most efficiently.

Two questions that arise when examining chat reference is what types of questions are being asked, and with what frequency they are being asked. With information of the types of questions that are asked, a comparison can be made between the various types of reference services. These comparisons can be important; especially during times of budget restrictions to make sure that the various services are staffed properly when the patrons need them.

Currently there is a desire to make reference services available twenty-four hours a day. In order to accomplish this, it will be necessary to have consortiums of libraries working together. In chat reference it will be necessary to make sure that the member libraries have the resources needed to answer patron questions, regardless of what institution the patron is from. Without knowledge of the types of questions that are asked through chat reference, this type of planning becomes increasingly difficult. With this knowledge, consortiums can be formed secure in the knowledge that the reference materials that they possess should enable them to answer the questions that arise. This study investigated the chat questions that were asked at three Universities: Duke, the
University of North Carolina at Chapel Hill, and North Carolina State University. The questions were taken from all three Universities during the month of November, 2002.

**Background**

Duke University, North Carolina State University, and The University of North Carolina at Chapel Hill provided transcripts of the questions that were asked through their respective chat reference services for the month of November, 2002. These universities are all located in North Carolina in a region referred to as The Triangle (Durham, Chapel Hill, and Raleigh). Each of these universities has a different educational focus. All of the institutions in the study use the same software to provide chat reference services. Although all of the institutions provide chat reference services, and use the same heading to provide access to the service, the hours that the service is available differ from school to school.

Duke University is a private institution located in Durham, North Carolina. Among its academic programs the University has schools of medicine, engineering, business, divinity and law as well as its college of arts and sciences. Duke is the smallest school in the study with 6,646 undergraduate students and 6477 graduate students enrolled during the Fall 2002 semester. Duke provides chat reference services Monday-Thursday 1:00-5:00pm, and again at 6:00-10:00pm and on Friday 1:00-5:00pm. Under the heading of “ask a librarian” links to chat reference are found on the library’s home page, on the “articles and databases” page through the list of individual databases, and on the e-journals page down to the list of individual journals.

North Carolina State University (NCSU) is a public land grant institution located in Raleigh, North Carolina. The libraries at this university support education and
research in areas of agriculture, business, design, engineering, arts and sciences, textiles, and veterinary medicine. This is the largest school in the study with 22,780 undergraduate students and 6,857 graduate students enrolled during the Fall 2002 semester. Of the three schools, NCSU was the first university to provide chat reference. Chat reference is provided Monday through Thursday 9:00-9:00pm, Friday 9:00am-5:00pm, Saturday 1:00pm-5:00pm, and Sunday 1:00-9:00pm. There is a link from the library’s home page as well as a button at the top of every page in the catalog, the database list, and the list of e-journals.

The University of North Carolina at Chapel Hill (UNC) is located in Chapel Hill, North Carolina. The libraries here support schools of law, medicine, social work, public health, dentistry, education, information and library science, and business. For the Fall 2002 semester, UNC had 15,961 undergraduate students and 7,684 graduate students. The hours that the service is available to students are 1:00-4:00pm Monday through Friday and 7:00-9:30pm Monday-Thursday. The link to the chat reference service can be found on the library’s home page, from the first page of the electronic indexes and databases section, from first page on the Journals in electronic format section, and from the catalog section of the website itself, although there is no link in any of individual catalog entries.

These schools all enjoy a strong academic reputation and all of these schools belong to the TRLN, Triangle Research Library Network. Being a member of the TRLN allows students, faculty, and staff associated with one of the schools to check out materials from the other member schools using school ID. That is, a Duke student can check out a book from UNC with a Duke ID. These schools also cooperate in collection
development. If one school has a strong Chinese collection, then another of the schools may try to develop a strong Japanese collection.

A better understanding of the chat reference services that these schools provide may be helpful to understand if the services that each institution offers is unique to that particular institution. In other words, are questions asked at NCSU only answerable by the library at NCSU, or could it be answered at UNC or Duke?

**Literature Review**

There has been little research into the types and frequency of question asked during chat reference. A majority of the literature describes the types of virtual reference services that are in use in the library setting and the software that powers these services. When a categorization of question does occur, it usually deals with e-mail reference services, rather than chat reference.

There has been much work done analyzing the use of digital reference in the library. Gray (2000) looks at the various practices using virtual reference. It is noted that as the World Wide Web becomes accessible to more people, libraries are expected to provide more of their services on the web. While examining the future of virtual reference services, it becomes clear that chat reference is one of the services that patrons are going to want as more people become familiar with the chat technology. Janes, Carter, and Memott (1999) analyzed the types of digital reference services that academic libraries were providing to their patrons. At the time of the study, digital reference was in its infancy. The authors stated that none of the libraries surveyed used chat reference at the time, but it was possible that as academic libraries became more familiar with chat technology they would adapt to it.
Implementation of digital reference serves is also an area where some research has been conducted. Ciccone (2001), Tenopir (2001), and Kawakami (2002) all write about how practices need to change in order to accommodate virtual reference, and how various schools are implementing such changes. These changes range from putting links to digital reference services on their home page to creating FAQ (frequently asked questions) lists that patrons can examine before asking a question through any of the reference services. Francoeur (2001) evaluates the different programs that can be used to provide chat reference services. Methods range from free programs provided by Yahoo! and AOL, to specialty software that allows reference librarians to send transcripts of the session back to the user and to “push”, or send during the chat, applicable websites that may be pertinent to the user during the chat session.

Much work has been done to devise evaluation methods for digital reference. These methods can influence how chat reference is implemented and enhanced after reviews of the service that an institution is providing. Oder (2001) mentions that at the time of this study, some libraries do not perform log analysis of the questions that they do receive and that usage at different libraries varies widely as does the hours that service is available. Kasowitz, Bennett and Lankes (2000) proposed a set of standards for digital reference. These standards are based around accessibility, current practices, turnaround, and response policy. Janes, Hill, and Rolfe (2001) evaluated the service that ask-an-expert websites provided. Questions of varying types were developed to be asked of all of these sites. These services evaluated whether they answered the question, if the questions were answered fully, and if the user would use that particular service again.
Although these standards were used to evaluate e-mail reference they are also useful in evaluating chat service.

There have been many studies that categorized the questions that have been asked through e-mail reference services. Bushallow-Wilbur, DeVinney, and Whitcomb (1996) looked at the e-mail reference services at three libraries at SUNY Buffalo. Most of the questions at this time were ready reference questions that required little negotiation between librarian and patron. They also created categories for library policy, OPAC questions, and purchase requests. Most of the questions were sent during regular business hours on weekdays. Garnsey and Powell (2000) examined e-mail reference services in the public library. This study created categories based on the type of question asked: ready reference, research questions, genealogy, library technology, requests for materials, bibliographic verification, and other. The top three question categories were ready reference, research question, and genealogy. Carter and Janes (2000) examined the types of e-mail questions that were asked at the Internet Public Library. Here the question was put into a predetermined category by the user initially and then answered by the staff. There seemed to be difficulty in having patrons assign categories for the question because of a misunderstanding of the type of question that they were asking or the type of resources needed to answer the question. The question categories created by this study are very broad, and not well suited for a table that can be used to easily chart questions. Diamond and Pease (2001) created categories based on the complexity and type of questions asked. The eleven categories created by question type were: questions answered using standard reference resources, catalog look-up and use, starting-points for term papers and assignments, specific factual but not ready reference, information
literacy, navigating the ReSEARCH station, database mechanics, connectivity questions, library policies, procedures, scope of collections, Non-library questions and referral to other departments, and non-questions (suggestions, complaints, thanks). The categories created based on the complexity of the question are: non-complex; referrals and non-questions; standard reference; and broad or complex. There was one study that devised a question classification scheme for chat reference. Patterson (2001) took the question that the US Department of Energy Library received through its chat reference service and categorized them depending on the type of user who asked the question and the type of question asked. The categories were DOE (Department of Energy) headquarters, DOE non-headquarters, and non-DOE. The questions were categorized by being either document related or information related.

**Methodology**

The study is a content analysis of chat reference questions that have been asked at three schools during November 2002. The questions came from three institutions that use chat reference: Duke University, North Carolina State University, and The University of North Carolina Chapel Hill. The head of the reference department was asked if it would be possible to get transcripts of the questions that have been asked through the respective school’s chat reference services. After the questions were gathered, they were examined and put into categories depending on the type of question that was asked. Additionally, the frequency of the category being asked were examined and compared between the various universities to determine whether there are certain types of questions that are asked more or less frequency on chat reference. It became evident that the categories that have been designed to handle email reference requests are adequate to handle chat
reference as well. Developing the breadth of the categories may be difficult. If a
category were too broad it won’t help describe the types of questions contained in it. If
the category were too narrow, it would be too cumbersome to use the system to track the
questions on a day-to-day basis.

A schema was created to categorize the chat reference questions that were asked
at the various schools. The schema that was created is a table with broad subject areas at
the top of the table and the type of resource used to answer the question along the side of
the table. This table was designed to capture which subject areas are having the most
questions asked. The subject areas chosen are Business, Science, English, Humanities
and Sociology Sciences, Library Processes, and a miscellaneous category. The Library
Processes category caught questions about how to use databases, indexes, the catalog,
and other library related questions. The miscellaneous category was evaluated but it was
not necessary to create another category since very few questions were placed in this
category. The rows that the side of the table are designed to list what resources were
used to answer the question. The headings are ready reference, E-databases, web,
reference book, library website, referral, other, and library specific. The purpose of these
categories was to capture what type of resource was used to answer the question, and to
determine whether it would be possible for one library to answer a question that went to
another library.

The table design was inspired by classification systems that were created to
quantify e-mail reference questions. Carter and Janes (2000) created tables based on the
subject area. Diamond and Pease (2001) categorized questions based on the type of
resource that was used to answer the question. Garnsey and Powell (2000) based their
categories on the type of questions that were asked from the public library perspective.

The chat transcripts from each university were read and evaluated. If the
transcripts showed that the user disconnected from the service before the librarian had a
chance to connect, the question was discarded from the study. Each chat event may
contain multiple questions. If this is the case, each question was counted separately. The
resources that were used to answer the questions were determined from the transcript. If
the type of resource used to answer the question was unable to be determined, the
resource that the reviewer would use to answer the question was chosen.

An awareness of the following questions were kept in mind while examining
conducting this study:

- Are there any types of questions that aren’t asked through chat reference?
- Do the universities have similar types of questions asked during chat
  reference, or does the nature of the question depend upon the type of
  university that the question is coming from?
- Does the nature of the university (i.e., engineering school, liberal arts
  school) influence the number of questions that are asked in chat?
- Are the questions that are asked answerable with only the resources that
  are held at specific universities?
- Are only university members using chat, or are members of the general
  public using it as well?

It needs to be noted that this survey was conducted for a short period of time (one
month), and there may be trends that exist that were not be captured by the data.
Analysis

The results of analyzing the chat transcripts were interesting. The category that received the most questions was the library processes category. Most of the questions dealt with how to use databases, how to find books in the catalog, and other questions about how to use the library. Most of the answers are available on the libraries’ web sites but are located many levels down from the home page. It could be that it is easier for the user to ask the chat service how to use the library than to find the appropriate page on the website. Another reason could be that patrons from outside the university are using the library and do not realize that the answers are on the web page. As library websites become better tailored to meet the needs of their communities, this category may become less relevant.

Humanities and Social Sciences received the next highest number of questions. This category includes sources such as book reviews, biographies, and history. These sources tend to be popular with students who are working on assignments for English, Journalism and Psychology classes. If a student working on an assignment needed help finding information for these classes and asked through chat reference, this would be the category that the questions would be put in. All of the universities in the study have these classes.

There were not many questions that were placed in the miscellaneous category. It might seem that the anonymity that the service provides would be conducive for the patrons to ask more questions that could not be placed in a category. The data indicates that this is not the case. One reason is that the links to get to the chat reference service are inside of the libraries’ website. Casual question askers would not find the link on a casual perusal. Another factor that may be pertinent is that most of the chat questions
concerned how to find various resources for a project. The patrons were not asking for help finding an idea for research, but were asking for help finding materials that would help them explore ideas that they were already researching.

The type of resources that were used most frequently were the electronic resources: the web, e-databases, and the library website. These resources are the quickest for the librarian to use while doing chat. Most of the questions dealt with library processes and could be answered by referring the patron to the proper section of the library web site. For the questions that dealt with a non-library processes, electronic indexes and databases provide easily accessed information to the librarian, which could then be passed on to the patron.

**figure 1**

<table>
<thead>
<tr>
<th>Types of resources</th>
<th>Science</th>
<th>Business</th>
<th>Humanities and Social Sciences</th>
<th>Library Processes</th>
<th>Misc</th>
<th>Total by sources</th>
</tr>
</thead>
<tbody>
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<td>Ready Reference</td>
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</tr>
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<td>E-database</td>
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<td>4</td>
<td></td>
<td>11</td>
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<td>Web</td>
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<td>1</td>
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<td></td>
<td>2</td>
</tr>
<tr>
<td>Reference Book</td>
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<td>2</td>
<td>1</td>
<td></td>
<td>4</td>
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<tr>
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<td>10</td>
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<tr>
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<td>10</td>
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<td>10</td>
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<tr>
<td>Referral</td>
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<td>1</td>
<td>4</td>
<td></td>
<td>7</td>
</tr>
<tr>
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<td></td>
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<td>2</td>
</tr>
<tr>
<td>Total by category</td>
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<td>39</td>
<td>6</td>
<td>62</td>
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</table>

number of questions: 62
number of questions discarded: 10
Figure 2

<table>
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<tr>
<th>Types of resources</th>
<th>Science</th>
<th>Business</th>
<th>Humanities and Social Sciences</th>
<th>Library Processes</th>
<th>Misc.</th>
<th>Total by sources</th>
</tr>
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<td>2</td>
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<td>Total by category</td>
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<td>17</td>
<td>31</td>
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</table>

Number of questions: 64
Number of questions discarded: 4

Figure 3

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<th>Business</th>
<th>Humanities and Social Sciences</th>
<th>Library Processes</th>
<th>Misc.</th>
<th>Total by sources</th>
</tr>
</thead>
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<td></td>
</tr>
<tr>
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<td>3</td>
<td>4</td>
<td>12</td>
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<tr>
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<tr>
<td>Total by category</td>
<td>61</td>
<td>8</td>
<td>148</td>
<td>203</td>
<td>42</td>
<td>440</td>
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</table>

Number of questions: 440
Number of questions discarded: 84

Discussion

The data is surprising. One assumption that was carried into the study was that there would be a large difference between the types of questions asked in chat reference, and the type of school. This does not seem to be the case. All of the schools received mainly questions about how to use the library and its various systems (interlibrary loan, circulation, the card catalog, the various indexes and databases that it subscribed to). The
next highest grouping of questions was people asking humanities related questions. The largest difference was that NCSU, the more technical of the schools, received a higher percentage of science questions than the other two schools.

It also appears that the same categories can be used across different types of schools. Most of the questions that were asked could be put into a category. The school with the highest percentage of miscellaneous questions was UNC, and that was less than 20% of the questions asked. It appears as if the categories that were created to handle e-mail reference questions can be adapted for use in chat reference.

It would appear that the number of chat questions that an institution receives depends on how prominent the service is displayed on the library web site. NCSU has the most prominent advertising for its chat service and received roughly 6 times more chat questions than either UNC or Duke. NCSU has had chat reference longer than either UNC or Duke. Faculty and student familiarity could be another factor that needs to be taken into account.

Another question put forth in the study was are the questions that are asked answerable with only the resources that are held at specific universities? In other words, if a student at NCSU asked a question, would the library at UNC be able to answer it. Most of the questions asked in the science, business, humanities, and miscellaneous categories could be answered by any of the schools. NCSU did have a science question and 2 miscellaneous questions that required school specific resources.

The library systems category had the most library specific questions. These questions included how to access databases from off-campus, how to do interlibrary loans, location of items inside the library, and circulation policies. Most of this
information is on the libraries’ websites, but is available many links down from the home page. At the current time it is unreasonable to assume that a library from one school would be able to find this information on another libraries web site. However this would not be a hindrance to forming a consortium to handle chat reference questions. If such a consortium was formed training for the librarians involved could easily show where to find the appropriate information.

Conclusions

It appears from this study that it is possible to create a question grid that can be used by multiple schools for classifying the questions that get asked through chat reference. The primary difference between a liberal art school and an engineering school seems to be the number of science questions that are asked. In the case of all the schools in this study, the category that received the most questions was library systems. Two possibilities for this come to mind. Students might not pay attention to how to use the library systems until they need to use it and chat is the easiest and most anonymous way to ask a question. Another possibility is that there is so much information available on all of the libraries’ websites that it is deemed easier to ask how to do something rather than search the website for the answer.

Also, it appears to be feasible to create a consortium of schools to answer questions through chat reference. Most of the questions asked could be answered by any of the schools in the study. Most of the library specific questions were in the library systems category. To handle these questions a quick reference sheet could be created to show the answer to questions such as how to use the library databases from off campus, how to complete an interlibrary loan request, and the circulation policies of the various
schools. For the occasional question that required a source available in a specific library, the question could be forwarded to the school that had the resource via e-mail and answered when a librarian from that school was available. It did not appear that there were any instances in which the questions that required a specific source needed to be answered at once.

This study does raise some questions. Would the results be the same over a longer time period? This study only examined questions from the month of November, and it is possible that this was an atypical period for one or more of the schools involved. Are the results biased because the schools studied are relatively close together geographically? Duke, UNC, and NCSU are all located in the Research Triangle area of North Carolina, and this might contribute to the questions that have been asked. Is it possible that as the chat reference services at Duke and UNC more well known that the nature of the questions asked will change?

As chat reference becomes more available, future researchers may want to investigate some of the following issues.

- Will video chats become popular in an academic environment, or will the loss of anonymity that this creates make it less popular?
- How much of a factor is university politics in deciding whether to form chat consortia with other institutions?
- As other technologies develop, will chat reference become a permanent part of reference service, or will it just be a historical footnote?
- Does the location of the librarian doing the chat influence the types of materials that are used to answer chat questions?
This research looks at chat reference and how it is used at various universities. The results indicate that while this study contributes to the small but growing literature in the area, there is more work to be done to help establish the impact of chat reference in academic libraries.
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