Virtual Reference in an Academic Environment: Quantitative and Qualitative Analysis of Users’ Information Needs and Information-Seeking Behavior

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Overview

This study

- Examined the usage patterns and service effectiveness of virtual reference services in an academic library
- Quantitatively analyzed both live chat and email reference questions to map peak usage times, usage patterns, question types and response times
- Quantitatively and qualitatively studied 100 sample reference questions
- Qualitatively examined the process of 4 reference interviews through complete transcripts
- Qualitatively analyzed an online patrons’ satisfaction survey
Overview

The results of this study

- are applicable to all academic libraries
- have practical implications for staffing and training
- offer recommendations for service improvement
Introduction

Virtual Reference

- Technologically enabled reference service
- Communicate with library reference staff without being physically present
- Online communication channels, such as chat, IM, email
Introduction

The University of North Texas

- Serves more than 31,000 students
- Offers more than 400 distance class sections each semester via eCampus
- Spring 2005, web-based instruction counted for 26% of the course taught
- Five libraries
Introduction

The University of North Texas Libraries

- In-person reference desk services
- Telephone reference services
- Online live chat reference services
- Email reference services
Introduction

UNT Libraries Service Hours

1. Email Reference
   - 7 days and 24 hours
   - Response within 24 hours during a working day

2. Online Chat Reference
   - Mon – Thurs  10 am – 8 pm
   - Friday       10 am – 5 pm
   - Sat.         2 pm – 5 pm
   - Sun.         1 pm – 5 pm
Introduction

Ask a Librarian: Reference Assistance at the UNT Libraries

- **Reference Desks**
- **E-Mail Reference**
- **General Reference Questions**
- **Government Information Questions**
- **Reference by Phone**
- **Reference by Appointment**
- **Online Reference Help Desk**

ONLINE REFERENCE HELP DESK

Ask a librarian for help in real time, using chat room technology.

SPRING SEMESTER HOURS

NEW SPRING HOURS!

Monday - Thursday
10:00 AM - 8:00 PM
Friday
10:00 AM - 5:00 PM
Saturday
1:00 PM - 5:00 PM
Sunday
1:00 PM - 4:00 PM

Reference Desks
The UNT Libraries consist of several different buildings.
Research Questions

1. What is the general information-seeking behavior for patrons of a large academic library using virtual reference services?

2. What are the information needs of those patrons using virtual reference services?

3. To what extent have those patrons’ information needs been met?

4. What improvements, if any, of the virtual reference services would enhance the patrons' information-seeking experience and provide a higher quality of customer service?
## Methodology

<table>
<thead>
<tr>
<th>Data Collected</th>
<th>Time Frame</th>
<th>Types of Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Statistical reports of email and chat services</td>
<td>1/17/2005 – 5/6/2005</td>
<td>quantitative</td>
</tr>
<tr>
<td>100 sample reference questions from email and chat</td>
<td>6/15/2005 – 6/30/2005</td>
<td>quantitative</td>
</tr>
</tbody>
</table>
Findings


**Patron Login In Parameters - UNT Status**
(Live Chat only)

<table>
<thead>
<tr>
<th>Did not make a selection</th>
<th>Not affiliated with UNT</th>
<th>UNT Faculty/UNT</th>
<th>UNT Graduate Student</th>
<th>UNT Undergraduate</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number of Patrons</strong></td>
<td>32</td>
<td>12</td>
<td>16</td>
<td>71</td>
</tr>
<tr>
<td><strong>Pct. Of Patrons</strong></td>
<td>13.9%</td>
<td>5.2%</td>
<td>7.0%</td>
<td>30.9%</td>
</tr>
</tbody>
</table>
Patrons use more *email* service than *live chat* service
Findings

Patrons tend to use email and live chat services more frequently from Mondays to Thursdays

Average number of entries, by days of week: 1/17/05 to 5/6/05

<table>
<thead>
<tr>
<th></th>
<th>Sun</th>
<th>Mon</th>
<th>Tue</th>
<th>Wed</th>
<th>Thu</th>
<th>Fri</th>
<th>Sat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Live Chat Entries</td>
<td>0.5</td>
<td>2</td>
<td>1.7</td>
<td>2</td>
<td>2.4</td>
<td>0.9</td>
<td>0.2</td>
</tr>
<tr>
<td>Live Chat Percentage</td>
<td>5.2%</td>
<td>20.6%</td>
<td>17.5%</td>
<td>20.6%</td>
<td>24.7%</td>
<td>9.3%</td>
<td>2.1%</td>
</tr>
<tr>
<td>E-Mail Reference Entries</td>
<td>2.1</td>
<td>4.7</td>
<td>4.1</td>
<td>4.8</td>
<td>4.2</td>
<td>2.6</td>
<td>1.8</td>
</tr>
<tr>
<td>Email Percentage</td>
<td>8.6%</td>
<td>19.3%</td>
<td>16.9%</td>
<td>19.8%</td>
<td>17.3%</td>
<td>10.7%</td>
<td>7.4%</td>
</tr>
</tbody>
</table>
Findings

March has the most inquiries for live chat and April for email

Number of Entries Received by Month

<table>
<thead>
<tr>
<th></th>
<th>January</th>
<th>February</th>
<th>March</th>
<th>April</th>
<th>May</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chat</td>
<td>11</td>
<td>45</td>
<td>53</td>
<td>41</td>
<td>4</td>
</tr>
<tr>
<td>Email</td>
<td>72</td>
<td>91</td>
<td>59</td>
<td>112</td>
<td>15</td>
</tr>
</tbody>
</table>
Findings

Patrons tend to use live chat inquiries more often from 10 am to 4 pm daily

Number of sessions for all days in interval:
1/17/05 to 5/6/05 by hour of day (Live Chat only)

<table>
<thead>
<tr>
<th>Time</th>
<th># Sessions</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>9A</td>
<td>6</td>
<td>2.5%</td>
</tr>
<tr>
<td>10A</td>
<td>29</td>
<td>12.1%</td>
</tr>
<tr>
<td>11A</td>
<td>25</td>
<td>10.4%</td>
</tr>
<tr>
<td>12P</td>
<td>24</td>
<td>10.0%</td>
</tr>
<tr>
<td>1P</td>
<td>26</td>
<td>10.8%</td>
</tr>
<tr>
<td>2P</td>
<td>39</td>
<td>16.3%</td>
</tr>
<tr>
<td>3P</td>
<td>23</td>
<td>9.6%</td>
</tr>
<tr>
<td>4P</td>
<td>26</td>
<td>10.8%</td>
</tr>
<tr>
<td>5P</td>
<td>12</td>
<td>5.0%</td>
</tr>
<tr>
<td>6P</td>
<td>19</td>
<td>7.9%</td>
</tr>
<tr>
<td>7P</td>
<td>11</td>
<td>4.6%</td>
</tr>
</tbody>
</table>
Findings

100 sample reference questions

1 – Reference-related:
- Ready Reference
- Specific Search
- Research Request
- Bibliographic
- Literature Search

2 – Policy & Procedural
- e.g., library policy type questions, hours, renewal, passwords, etc.

3 – Directional
- e.g., where is the library? Etc.
Findings

4 – Technology Assistance
- e.g., sign on to database assistance
- e.g., help using a browser

5 – Other Library Services
- ILL (Inter-library Loan) requesting materials or to set up an ILL account
- Remote/ storage request – Needs materials from remote storage or another UNT library
- Reserve Materials
Findings

6 – Equipment/Facilities
- Anything to do with using some type of equipment in the library

7 – Out of Scope
- e.g., wants legal, tax, or medical advice

8 – Complaints
Findings

Types of questions asked in email and chat

![Bar chart showing types of questions asked in email and chat]

- Reference
- Policies
- Tech Assist
- Other
- Equipment
- Out of Scope

Question Type

Service Type
- Email
- Live Chat

Error bars: 95.00% CI
Findings

89.5% of live chat questions and 86.46% of email questions are answered

<table>
<thead>
<tr>
<th>Category</th>
<th>Live Chat</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>New</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>In Process</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Pending Patron Input</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>Closed- Answered</td>
<td>128</td>
<td>332</td>
</tr>
<tr>
<td>Closed-Partially Answered</td>
<td>12</td>
<td>6</td>
</tr>
<tr>
<td>Closed-Unanswered</td>
<td>12</td>
<td>6</td>
</tr>
<tr>
<td>New-Transfer</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Closed-Transferred</td>
<td>1</td>
<td>32</td>
</tr>
<tr>
<td>TOTAL</td>
<td>154</td>
<td>384</td>
</tr>
</tbody>
</table>
Findings

A study of the four reference interview transcripts indicates increased efficiency and service may be realized by providing more comprehensive answers and utilizing a series of follow-up questions.
Findings

Patrons’ median waiting time in the queue for live chat is between 41 to 50 seconds.
Findings

The main reason for queue logouts in live chat is due to long waiting time.

![Graph showing time patrons spent in queue before logging out](image)

- Bar graph showing the number of patrons and their waiting time (in seconds) before logging out.
- The waiting times are categorized into different intervals (e.g., 11-20 seconds, 21-30 seconds, etc.).
- The percentages of patrons waiting in each interval are also displayed.
- The diagram indicates that a significant portion of patrons (59.6%) wait for more than 60 seconds before logging out.
Findings

- 89.1% inquiries from live chat and 75.15% inquiries from email are completed within 6 hours.
- 45.96% of the responses to live chat reach the patrons within 1 hour.
- The result of online survey shows that Overall, over 80% of the patrons are satisfied with the virtual reference service provided by UNT libraries and over 95% of the patrons would use the service again in the future.
Suggestions

- More complete answers and the use of follow-up questions should be encouraged in the reference interview.

- Shorter waiting periods in online chat could reduce the drop-off rate (10%).

- Additional staffing during busy periods and times of the day might decrease the response time lag.
Limitations

- The study covers the period of 1/17/2005 to 5/6/2005, statistics may vary in other semesters.
- The study was designed after the data were collected by the university library.
- The full transcripts of reference interviews for this study is small.
Further Research

- IM virtual reference services at academic institutions
- Blog
Acknowledgement

The authors would like to thank the UNT Libraries Reference Department for providing the data used in this study and analysis.