Part 1: Survey on Library Service Quality (September 2004-June 2005)

**Ethical Review**

As the purpose of this survey was directly related to assessing the performance of the library, this phase of the project was exempted from review by the Human Subjects Research Committee according to Section 1, Part A, Article 1.1d) of the *Tri-council Policy Statement: Ethical Conduct for Research Involving Humans.*

**Methodology**

**The Survey Instrument**

The LibQUAL™ survey executed at the University of Lethbridge (see Appendix A) consisted of 27 statements including 22 core statements and 5 “local” statements, a general satisfaction section, a section on library usage, user demographics and space for comments.

The 22 core statements of the survey measure user perceptions of service quality in three dimensions:
- Affect of Service – the interpersonal interactions between library staff and users
- Library as Place – the physical environment of the library
- Information Control – the quality of and access to information resources and collections

Each dimension is assessed through at least five different statements to ensure validity of the responses.

The five local statements are optional. The LMT opted to include these questions and, from a list of 108 possible questions provided by ARL, selected five that it felt would give some feedback on our efforts in the areas of document delivery service, promotional activities, and information literacy.

For each of the 27 questions, survey participants were asked to rate each statement three times on a scale of 1 (lowest) to 9 (highest) according to:
- The **Minimum** level of service that the user would deem acceptable
- The **Desired**, or ideal, level of service that the user would want
- The **Perceived**, or actual, level of service that the user believes the library provides.
Participants could choose “NA” (not applicable) if they felt the question was not applicable or if they chose not to respond to a given statement.

The general satisfaction section of the survey the user was asked to indicate their level of agreement on each of eight statements using a Likert Scale of 1 (strongly disagree/extremely poor) to 9 (strongly agree/extremely good). Statements in this section relate to information literacy outcomes as well as overall satisfaction with the library.

To get some idea about pattern of library usage, users were asked to indicate the frequency with which they used resources on site, via the library website or via non-library gateways such as Google™, etc.

The demographics section collected information on age, gender, disciplinary area, user constituency, and position within the institution. The disciplinary options presented to the respondents were customized using the department listing of the campus directory. These disciplines were then mapped to the broader, standardized list of LibQUAL+™ disciplinary areas as outlined in Appendix B.

Finally the University of Lethbridge chose to offer participants an incentive of one of five $100 gift certificates from the University Bookstore. As a result, participants wanting to be considered for the draw were asked to submit their email address. Inclusion of the email address was strictly voluntary. The email address was automatically separated from the completed survey at the point of submitting the survey to maintain the confidentiality of the participants. Its sole purpose was to facilitate award of the incentive prizes.

The Population and Sampling

The target population for this survey was the University of Lethbridge Community which includes academic staff, graduate students, undergraduate students, non-academic/non-Library staff and Library staff, working and studying on three campuses in Lethbridge, Calgary and Edmonton as well as at a distance.

ARL provided guidance on minimum recommended sample sizes for large academic libraries with the advice that where populations were smaller than these recommended sizes, that participating libraries survey the entire population. As a result, we chose to survey the entire populations of academic staff, graduate students, non-academic/non-library staff and Library staff.

The undergraduate population exceeded the minimum recommended sample. It was subsequently decided to randomly sample this population group at the rate of approximately 20%. While consideration was given to surveying this entire population group, there were other surveys of undergraduates being conducted at the same time that
raised concerns in University Administration about survey fatigue. It was the preference of the University’s Office of Institutional Analysis that a) we sample this population group and b) we co-ordinate the sampling with the sampling for the other surveys.

With the permission of the Registrar’s Office, Institutional Analysis drew the sample of undergraduate students using the Banner Student database and provided the names and email addresses for the graduate student population group. Human Resources agreed to provide the names and email addresses for all academic staff (including sessionals) and all non-academic staff (including library staff and post doctoral research fellows).

Execution

The University of Lethbridge provides all students and staff with email addresses. Students are advised that the University email address is the official channel for electronic communications and announcements. Thus, there was no concern about invalid email addresses.

A separate electronic mailing list was established for each sample population group. The mailing list was populated with the email addresses provided by Institutional Analysis and by Human Resources. These mailing lists were used to send the initial invitation to participate as well as each of three reminders.

A generic email account, libqual.library@uleth.ca, was established as the central recipient of any concerns or questions about the survey so that questions about the survey would not get lost amidst personal email. This account was monitored by the LibQUAL+™ Project Librarian.

The survey was scheduled to run February 28 to March 18 although it was not officially shut down until March 23 as a result of operational issues. A total of four communications were sent to the survey mailing lists: the invitation to participate and three reminders. Each communication was customized to address the specific audience of each of the mailing list. The initial invitation was sent by the University President on the Monday that the survey opened. Two reminders were sent by the University Librarian on the two following Mondays. On the advice a faculty member, a third reminder was sent by the University President on Thursday, March 17.

Print surveys were available by request but were not required.

Promotions

A local LibQUAL+™ project website was established as a resource for those curious about the project. This site remains available at http://www.uleth.ca./lib/libqual.
The Library’s Public Relations and Promotions Committee (PRP) played a significant role in helping to draft the invitation and the reminders. In addition, they promoted the survey, both during the lead-up to the survey as well as during the survey run, by facilitating the following:

- Posters (2 variations for before & during)
- Screensavers (2 variations for before & during)
- *The Melorist* (variations of “Three Lines Free” (leading up to & during))
- *The Legend* (article)
- Notice Board (prominent placement during)

Presentations were made to various groups to educate them about what we were doing and why. These groups included Library Staff, GFC Library Committee, Deans Council, Arts & Science Faculty Council, Health Sciences Faculty Council. In addition, the Dean of Education sent an email to the Faculty of Education mailing list encouraging them to participate in the survey. Finally, an announcement of the survey was made to Fine Arts Faculty Council. The only faculty not to receive advanced promotion of the survey was the Faculty of Management.

As mentioned earlier, an incentive, the opportunity to win one of five $100 UofL Bookstore gift certificates, was offered.

**Data handling**

The web survey is hosted and the data stored behind a firewall at Texas A&M University. Any identifying information (i.e., email address) is separated from the completed surveys to ensure confidentiality. 50 email addresses are randomly selected from those submitted and are forwarded to the participating library for the purposes of awarding the incentives.

The results of the survey were then tabulated by the ARL and compiled into an aggregated results notebook that provides overall results for all constituency groups except Library staff as well as aggregated results for each individual constituency group. As well institutional data files and comments are available for downloading and analysis by each participating library.

Comments were mounted for public review on the local LibQUAL™ website, [http://www.uleth.ca/lib/libQUAL/libqual-comments.asp](http://www.uleth.ca/lib/libQUAL/libqual-comments.asp). To ensure the confidentiality of the respondents, identifying names and/or information that might have compromised their confidentiality was removed. In addition, comments about specific members of the Library staff were edited to remove personal identification, to ensure the privacy of the individuals and to maintain a focus on the comments as they pertained to library services. The comments posted for public review were made searchable by constituency group and by keyword.
Analysis

The aggregated results notebook was reviewed; specific interest being given to the results by individual constituency group.

Comments were analyzed using the software package, AtlasTI.

Interpretation of the Results

The aggregated results present the mean score for each survey statement using completed surveys.

Service Adequacy gaps, a measure of how well the library is meeting the expectations of its users, were calculated by subtracting the Minimum scores from the Perceived scores (i.e., Perceived minus Minimum). A negative Adequacy score indicates that the users’ perceptions of library service fall below their Minimum expected level of service. A positive Adequacy score indicates that the users’ perceptions exceed their Minimum expectations of service. The higher the number associated with service Adequacy gap, the better the library is performing.

Service superiority gaps are calculated by subtracting the Desired scores from the Perceived scores (i.e., Perceived minus Desired). A positive superiority gap is an indication that the library is exceeding Desired levels of service. The higher the number associated with service superiority, the better the library is performing.

Adequacy and Superiority gaps are reflected in the radar charts plotted in the aggregated results notebook (see Figure 1). Each “spoke” in the radar chart represents one of the 22 core statements from the survey. The Minimum, Desired, and Perceived scores are plotted. Red on the graph is a visual indication that the Adequacy gap is negative. Blue indicates that the Adequacy gap is positive. Superiority gaps, when they occur, are depicted in green.
Figure 1: Example of a radar chart

The means for each dimension were calculated based on the means of the individual statements that challenge each dimension. The means for the overall dimension follow the same logic explained above but are displayed visually using a bar graph (see Figure 2).

Figure 2: Example of a bar graph or “zone of tolerance” chart.

Plotting the Minimum and Desired means for each dimension results in a visual representation of a “zone of tolerance” as represented by the gray bar. The Perceived
mean for each dimension is also plotted and its difference from the **Minimum**, the **Adequacy** gap, is represented as an orange bar. Ideally, a library wants to see the orange bar placed within the gray bar meaning that the library is exceeding **Minimum** expectations. An orange bar falling below the gray “zone of tolerance” indicates that the library is not meeting even **Minimum** expectations.

The means for each dimension combine to give an overall mean for all services for the library. This is represented in the right hand panel of the bar graph.

The complete Aggregated Results Notebook is included in Appendix C and the LibQUAL+™ Highlights for Spring 2005 are included in Appendix D.

**The Results**

**Survey Monitor**

Based on advice from previous LibQUAL+™ libraries, the University of Lethbridge had a goal of achieving an overall response rate of 30% or more. The survey was promoted heavily in advance of the actual survey run as well as during the survey using methods described earlier in this report. As well, the involvement of the University President was a key strategy for encouraging response and participation in this survey.

The Survey Monitor (see Figure 3) is a tool provided by the ARL to monitor the progress of survey submission over the course of the survey run. As can be seen from examining Figure 3, there was an immediate response to the initial invitation to participate which dwindled over the course of the week. With the first reminder, sent by the University Librarian one week after the survey opened, there was a resurgence of response that was duplicated albeit with less intensity with the second reminder sent by the University Librarian in the third week of the survey. The final reminder, sent by the University President on the Thursday prior to the survey closing, seemed to have the anticipated (and welcomed) effect of encouraging a final burst of responses.
Figure 3: LibQUAL™ Survey Monitor for the University of Lethbridge, Library

This visual representation of response over the course of the survey, shows that there is benefit to having the active support of the University Administration. This supports the advice of other libraries that have run LibQUAL™.

A total of 829 responses were received (see Figure 4). One may conclude from the median and average survey completion times, that most respondents found this survey took very little time to complete while there were a few who took much longer, relatively speaking.

Figure 4: Completed surveys, Median

A breakdown of these responses by constituency (or user) group appears in Figure 5.
Response rates

The surveys completed were screened by the ARL according to three criteria:
- Only records with complete data on the 22 core statements and where the respondents chose a “user group,” if applicable, were retained in the summary statistics.
- Responses containing more than 11 “NA” (not applicable) responses were eliminated from the summary statistics.
- Records containing more than 9 logical inconsistencies (e.g., “Desired” score less than the “Minimum” score) were eliminated from the summary statistics.

Therefore the total number of valid responses was 793. Figure 6 outlines the final response breakdown by user group including response rates.

<table>
<thead>
<tr>
<th>User Group</th>
<th>Completed</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undergraduate:</td>
<td>448</td>
<td></td>
</tr>
<tr>
<td>Graduate:</td>
<td>102</td>
<td></td>
</tr>
<tr>
<td>Faculty:</td>
<td>169</td>
<td></td>
</tr>
<tr>
<td>Library Staff:</td>
<td>27</td>
<td></td>
</tr>
<tr>
<td>Staff:</td>
<td>83</td>
<td></td>
</tr>
<tr>
<td>Total:</td>
<td>829</td>
<td></td>
</tr>
</tbody>
</table>

Figure 6: Official and final responses by user group

The overall response rate for all five user groups including Library staff was 26.46%. However, as can be seen in Figure 6, especially in the response rates by user group sample, the Library staff over-responded and the non-academic/non-library staff under-responded. As the focus for the evaluation was really directed at our academic users (i.e., faculty, graduate students and undergraduate students), the response rate for this group, 28.78%, is the most important response rate to note.

Even within the academic users, the response rate for each user group varies from 28.04% for undergraduate students to 28.09% for faculty to 33.89% for graduate
students. To explore these differences a little further, a one-way analysis of variance was done using the mean Adequacy gaps for each dimension across these three user groups. Significant differences were found for each dimension reinforcing the notion that each group should be treated separately for the purpose of analysis. (See Appendix E for complete statistical details.)

**Representativeness**

Respondents had been asked to indicate their departmental affiliation, or subject area, as part of the demographic information calculated. These departmental affiliations were mapped to the standardized disciplinary categories of LibQUAL+™.

The number of respondents within each departmental affiliation was too small to be reliable for the sake of analysis at this level of detail. Therefore analysis of the survey results continued at the disciplinary level.

In the disciplinary representativeness charts that follow, the blue points indicate the per cent of the total population represented by each discipline as submitted to the ARL. The red points represent the per cent of the sample population represented by each discipline as self reported by the respondent. Ideally, the red points should overlay the blue points exactly.
Figure 7: Undergraduates by discipline

In the undergraduate population, there tended to be an over response in all disciplinary areas except for “Business” (or Management in the language of the University of Lethbridge) and “Other”. “Other” as a subject area or departmental affiliation was used included to capture those individuals who were not affiliated with a particular department or program of study.
Figure 8: Graduate student representation by discipline

As with the undergraduate respondents, the graduate students tended to over-respond except in the case of Health Sciences and “Other”.

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Interestingly, those in disciplines associated with the Faculty of Arts and Science, namely Humanities, Social Sciences/Psychology, and Science/Math all over responded while faculty affiliated with the professional schools either responded proportionately to their population (i.e., Performing & Fine Arts and Education) or under responded (i.e., Health Sciences and Business).

It is interesting to note a few things about the faculty response by discipline. The first is the issue of endorsement. Faculty members in the Faculty of Education, who responded almost in proportion to their population, were sent an email from their Dean highlighting the importance of this survey. In the Faculty of Fine Arts, which also responded in proportion to its population, there was special mention of the survey at their Fine Arts Council. The Faculty of Arts and Science had a special presentation made to their
Faculty Council prior to the distribution of the survey. The School of Health Sciences had a presentation made to their School Council about mid-way during the survey run. No mention of the survey was made to the Faculty of Management; the invitation to participate and the reminders were the only known means of communication with the members of this faculty.

It is possible that the endorsement campaign, combined with the level of support shown by the Deans in the various faculties, affected faculty response since there seems to be a logical correlation (albeit one that cannot be measured). It is possible, as well, that workload issues within a unit or internal climate issues may have interfered with faculty response in the units with lower response rates.

**Reliability**

Although the psychometric properties of the LibQUAL+™ instrument have been established, the ARL advised assessing the reliability of the instrument in each setting. Therefore reliability analysis was performed on each set of items that make up a dimension of service quality. The analysis showed (see Table 1) that Cronbach’s coefficient alpha was in the high or very high range for all sets of items indicating high reliability of the instrument within the University of Lethbridge environment.

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Cronbach’s alpha</th>
<th>Number of items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Affect of Service</td>
<td>0.944</td>
<td>9</td>
</tr>
<tr>
<td>Information Control</td>
<td>0.922</td>
<td>8</td>
</tr>
<tr>
<td>Library as Place</td>
<td>0.821</td>
<td>5</td>
</tr>
</tbody>
</table>

Table 1: Cronbach’s alpha

**Perceptions: Minimum, Desired, Perceived and Adequacy Gaps**

a. **Overall Perceptions**

Figure 10 demonstrates the overall response for all University of Lethbridge respondents as compared to the overall response for all college and university libraries participating in the Spring 2005 LibQUAL+™ survey. As may be seen from these graphs and charts, the University of Lethbridge users are relatively typical of the overall “zones of tolerance” (the gray bar; the difference between Minimum and Desired scores) for each dimension of library service quality. However, the University of Lethbridge users perceive the level of service for each of these dimensions slightly differently, these Perceived scores coming slightly
higher for “Affect of Service” and “Library as Place” while being lower in “Information Control”.

Overall, comparing the resulting means for the Minimum and Desired levels of service, University of Lethbridge users have a slightly smaller zone of tolerance for library services although their overall perception of library services (i.e., Perceived mean = 6.95) reflects the perception of users across college and university libraries.

Figure 10: Comparison of UofL Overall response to Colleges and University Libraries participating in Spring 2005 LibQUAL+™
b. Undergraduate Students

Figures 11 and 12 outline how the library is \textbf{Perceived} by undergraduates. As can be seen in Figure 11, across all dimensions of service, the Library is exceeding the undergraduate students’ \textbf{Minimum} expectations (orange bar within the gray zone of tolerance).

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{Figure11.png}
\caption{Undergraduate Students – Zones of Tolerance}
\end{figure}

Figure 12 outlines \textbf{Minimum}, \textbf{Desired} and \textbf{Perceived} scores for each of the 22 core statements. While the Library is exceeding the \textbf{Minimum} service expectations of the undergraduate students, there is some concern over “print library materials I need for my work” (IC-3), “print and/or electronic journal collections I require for my work” (IC-8), and “quiet space for individual activities” (LP-5).
To determine if there were differences between undergraduates on the basis of discipline, a one-way analysis of variance (ANOVA) was performed to compare the Adequacy means for each statement of each dimension between disciplinary areas. There were sufficient cases in each of the disciplinary categories to allow for all disciplines to be included. (See Appendix F for statistical analyses.) It should also be noted that, before proceeding with each Analysis of Variance, a test for homogeneity of variance was performed to ensure that this assumption of the ANOVA was met. Details of these tests are also available in Appendix F.

The ANOVA revealed that, on all 22 core statements, save one, there were no statistically significant differences among Adequacy means across the disciplinary areas of the undergraduate students. The only significant difference appeared for this statement: “library space that inspires study and learning.” \( F (7,414) = 2.602, p = .012 \). Contrast tests of means for students in the Sciences/Math and those in the Health Sciences versus students in other disciplinary areas revealed that the two former groups had a more favourable perception of the Library than undergraduate students in the other disciplinary areas (See Appendix F).
c. Graduate Students

Figure 13 provides visual representation of the zones of tolerance for library service quality for graduate students. Overall, the Library appears to be meeting the needs of the graduate students. With respect to the specific dimensions, there are large *Adequacy* gaps for “Library as Place” and “Affect of Service” but it is evident the Library is failing to meet minimum expectations in the area of “Information Control”.

![Figure 13: Graduate Students – Zones of Tolerance](image)

Figure 13: Graduate Students – Zones of Tolerance

Figure 14 provides a visual summary of the graduate students’ responses to the 22 core statements. The failure to meet minimum expectations overall for “Information Control” is explained in this radar chart where it appears the greatest concerns for graduate students are with respect to:

- “printed library materials I need for my work” (IC-3)
- “the electronic information resources I need” (IC-4)
- “print and/or electronic journal collections I require for my work.” (IC-8)
The radar chart (Figure 14) also highlights that the Library is barely meeting the **Minimum** expectations of graduate students with respect to:

- **IC-1**: “making electronic resources accessible from my home or office”  
  (**Adequacy** mean = 0.03, s.d.=2.36)
- **IC-2**: “a library website enabling me to locate information on my own”  
  (**Adequacy** mean = 0.22, s.d=1.94)

The graduate students’ responses were analyzed by comparing the **Adequacy** means for each of the 22 core statements across disciplinary groups using a one-way analysis of variance. There were too few cases in the disciplinary categories of Health Sciences, Performing & Fine Arts, and Other so these disciplinary categories were removed from the analysis. There were no significant differences to be found in this analysis, demonstrating that the graduate students were quite homogenous in their evaluation of library service quality.

d. Faculty

As with graduate students, the Library is meeting the needs of faculty overall but just barely in this case. With respect to the individual dimensions of library
service, it appears the faculty are quite satisfied with “Library as Place” but less so with “Affect of Service” (although the Library is meeting minimum expectations overall in this area). Faculty are very dissatisfied with the dimension, “Information Control” where the Adequacy gap is very definitely negative.

![Radar chart showing faculty zones of tolerance](image)

**Figure 15: Faculty – Zones of Tolerance**

The radar chart for faculty (Figure 16) visually reveals that the Library is failing to meet minimum expectations on six of eight of the statements relating to the dimension “Information Control”:

- “making electronic resources accessible from my home or office” (IC-1)
- “a library website enabling me to locate information on my own” (IC-2)
- “the printed library materials I need for my work” (IC-3)
- “the electronic information resources I need” (IC-4)
- “easy to use access tools that allow me to find things on my own” (IC-6)
- “print and/or electronic journal collections I require for my work” (IC-8)

The Library is also barely meeting minimum expectations for seven of the nine statements relating to the dimension “Affect of Service” and is failing to meet the minimum expectations of faculty when it comes to “employees who understand the needs of their users”.

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Again, a one-way analysis of variance was performed to determine if there were disciplinary differences in the mean Adequacy scores for each statement. There were no significant differences found suggesting that faculty are also quite homogenous in their opinion of the Library.

Information Literacy

The University Library has focused many resources on developing a program of instruction in using the library, seeking, retrieving, evaluating and using information (i.e., information literacy). LibQUAL+™ provided an opportunity to “check in” on this initiative. Our user groups were asked three local questions to gauge the Minimum and Desired expectations as well as the Perceived level of service. Graphs illustrating the Minimum, Desired and Perceived means for the responses are included below (Figures 17, 18, and 19). (Although the graphs include the responses of Library staff for visual comparison, this group was not included in any of the one-way analyses of variance executed.)
a. “Teaching me how to access, evaluate, and use information.”

Figure 17 summarizes the **Minimum**, **Desired** and **Perceived** levels of service relating to the role of the Library in “Teaching me how to access, evaluate and use information.”

![Figure 17: “Teaching me how to access, evaluate, and use information”: Mean scores for Minimum, Desired, Perceived levels of service](image)

<table>
<thead>
<tr>
<th></th>
<th>Undergraduates</th>
<th>Graduate Students</th>
<th>Faculty</th>
<th>Library Staff</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desired</td>
<td>7.43</td>
<td>7.79</td>
<td>7.25</td>
<td>8.16</td>
</tr>
<tr>
<td>Minimum</td>
<td>5.81</td>
<td>6.49</td>
<td>5.90</td>
<td>6.44</td>
</tr>
<tr>
<td>Perceived</td>
<td>6.69</td>
<td>7.17</td>
<td>6.58</td>
<td>7.52</td>
</tr>
</tbody>
</table>

The one-way analysis of variance for **Minimum level of service** scores demonstrated significant difference between the three groups (For means, see Figure 17, $F (2, 646) = 5.385, p=0.005$). ANOVA of **Perceived level of service** scores also showed significant differences between the three groups (For means, see Figure 17, $F (2, 646) = 4.321, p = 0.014$). Contrast tests confirmed that these differences were significant between graduate students and undergraduate students and between graduate students and faculty. (See Appendix G for statistical analyses.)

With respect to the mean for **Desired levels of service** relative to this statement, because there was heterogeneity of variance between the groups, a more stringent criterion for asserting there is a significant difference in the means among the three groups (i.e., $\alpha = 0.01$) was used. The result of the one-way analysis of variance to compare the means for **Desired level of service** was significant only to $p<0.05$ and was therefore ignored.
b. “Providing me with the information skills I need for my work or study.”

Figure 18 summarizes the Minimum, Desired and Perceived levels of service relating to the role of the Library in “Providing me with the information skills I need for my work or study.”

<table>
<thead>
<tr>
<th></th>
<th>Undergraduates</th>
<th>Graduate Students</th>
<th>Faculty</th>
<th>Library Staff</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desired</td>
<td>7.59</td>
<td>7.86</td>
<td>7.29</td>
<td>8.24</td>
</tr>
<tr>
<td>Minimum</td>
<td>6.17</td>
<td>6.59</td>
<td>6.20</td>
<td>6.76</td>
</tr>
<tr>
<td>Perceived</td>
<td>6.84</td>
<td>7.25</td>
<td>6.59</td>
<td>7.44</td>
</tr>
</tbody>
</table>

Figure 18: “Providing me with the information skills I need for my work or study”: Mean scores for Minimum, Desired, Perceived levels of service

A test for homogeneity of variances was done for each mean and revealed that there was heterogeneity in the variance existed for all three means being examined. Again, the differences demonstrated in the one-way analysis of variance for the Minimum and Desired means were not significant to $p<0.01$ and were therefore ignored.

Again, for this question, because there was heterogeneity of variance for all three variables across the groups, a more stringent criterion for asserting there is a significant difference in the means among the three groups (i.e., $\alpha = 0.01$) was used. The result of the one-way analysis of variance to compare the means for Minimum level of service and Desired level of service was significant only to $p<0.05$ and was therefore ignored. However, the ANOVA for Perceived level of service among the groups did show significant differences at the higher criterion ($F(2, 626) = 5.440, p = 0.005$). The contrast testing for this mean, not assuming equal variances, demonstrated significant difference between graduate students and undergraduates ($t(167.815) = 2.580, p = 0.01$) and between graduate students and faculty ($t(228.436) = 3.472, p = 0.001$). (See Appendix G)
c. “Librarians providing help that assists in finding information needed now while improving my research skills.”

Figure 19 summarizes the Minimum, Desired and Perceived levels of service relating to the statement “Librarians providing help that assists in finding information needed now while improving my research skills.”

![Figure 19: “Librarians providing me with help that assists in finding information needed now while improving my research skills”: Mean scores for Minimum, Desired, Perceived levels of service](image)

The test for homogeneity of variances revealed that this condition was met with respect to the analysis for Minimum expectations. However, there was definite heterogeneity between the groups for the Desired mean and the Perceived mean.

The one way analysis of variance showed no significant differences in the mean for Minimum or Desired expectations of service for this statement. On the other hand, there were significant differences between the groups relative to the Perceived means ($F (2, 628) = 7.305, p = 0.001$).

The contrast testing further revealed significant differences in the Perceived means:
- between undergraduate students and graduate students ($t (175.418) = 2.626, p = .009$);
• between undergraduate students and faculty ($t(205.022) = 2.294, p = .023$); and
• between graduate students and faculty ($t(230.861) = 3.903, p < .001$).

Unlike the other statements, this statement did show significance in Adequacy of service gaps. The variance between groups was homogeneous, the one-way analysis of variance showed a significant difference ($F(2, 628) = 3.859, p = 0.022$) and the contrasting tests demonstrated significant difference between the Adequacy gap means of undergraduates and faculty ($t(628) = 2.599, p = .010$) and between those of graduate students and faculty ($t(628) = 2.246, p = .025$). (See Appendix G)

d. Information Literacy Outcomes

LibQUAL+™ asked users to rate their agreement on various statements of information literacy outcomes using a scale from 1 (strongly disagree) to 9 (strongly agree). Faculty consistently scored lower on these questions than did either undergraduate or graduate students.

• “The library helps me to stay abreast of developments in my field(s) of interest.”

<table>
<thead>
<tr>
<th>Question</th>
<th>Undergraduates (N=429)</th>
<th>Graduate Students (N=102)</th>
<th>Faculty (N=166)</th>
</tr>
</thead>
<tbody>
<tr>
<td>The library helps me to stay abreast of developments in my field(s) of interest.</td>
<td>Mean =5.56 (s.d.=1.86) Median = 6 Mode = 5</td>
<td>Mean = 5.69 (s.d.= 1.95) Median = 6.0 Mode = 6</td>
<td>Mean = 4.93 (s.d.= 2.08) Median = 5.0 Mode = 5</td>
</tr>
</tbody>
</table>
Figure 20: Undergraduate student response: *The library helps me to stay abreast of developments in my field(s) of interest.*

Figure 21: Graduate student response: *The library helps me to stay abreast of developments in my field(s) of interest.*
Figure 22: Faculty response: *The library helps me to stay abreast of developments in my field(s) of interest.*

- “*The library aids my advancement in my academic discipline.*”

<table>
<thead>
<tr>
<th>Question</th>
<th>Undergraduates (N=429)</th>
<th>Graduate Students (N=102)</th>
<th>Faculty (N=166)</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>The library aids my advancement in my academic discipline.</em></td>
<td>Mean = 6.41 (s.d. = 1.73)</td>
<td>Mean = 6.69 (s.d. = 1.83)</td>
<td>Mean = 5.28 (s.d. = 2.06)</td>
</tr>
<tr>
<td></td>
<td>Median = 7</td>
<td>Median = 7.0</td>
<td>Median = 5.0</td>
</tr>
<tr>
<td></td>
<td>Mode = 7</td>
<td>Mode = 7</td>
<td>Mode = 5</td>
</tr>
</tbody>
</table>
Figure 23: Undergraduate student response: *The library aids my advancement in my academic discipline*

![Histogram for Undergraduates](image)

Mean = 6.41  
Std. Dev. = 1.732  
N = 429

Figure 24: Graduate student response: *The library aids my advancement in my academic discipline*

![Histogram for Graduates](image)

Mean = 6.69  
Std. Dev. = 1.829  
N = 102
Figure 25: Faculty response: *The library aids my advancement in my academic discipline*

- “*The library enables me to be more efficient in my academic pursuits.*”

<table>
<thead>
<tr>
<th>Question</th>
<th>Undergraduates (N=429)</th>
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<th>Faculty (N=166)</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>The library enables me to be more efficient in my academic pursuits.</em></td>
<td>Mean = 6.67 (s.d. = 1.78)</td>
<td>Mean = 6.80 (s.d. = 1.82)</td>
<td>Mean = 5.61 (s.d. = 2.08)</td>
</tr>
<tr>
<td></td>
<td>Median = 7.0</td>
<td>Median = 7.0</td>
<td>Median = 6.0</td>
</tr>
<tr>
<td></td>
<td>Mode = 7</td>
<td>Mode = 7</td>
<td>Mode = 7</td>
</tr>
</tbody>
</table>
Figure 26: Undergraduate student response: The library enables me to be more efficient in my academic pursuits.

Figure 27: Graduate student response: The library enables me to be more efficient in my academic pursuits.
Figure 28: Faculty response: *The library enables me to be more efficient in my academic pursuits.*

- “The library helps me distinguish between trustworthy and untrustworthy information.”

<table>
<thead>
<tr>
<th>Question</th>
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<th>Graduate Students (N=102)</th>
<th>Faculty (N=166)</th>
</tr>
</thead>
<tbody>
<tr>
<td>The library helps me distinguish between trustworthy and untrustworthy information.</td>
<td>Mean = 6.07 (s.d. = 1.80) Median = 6.0 Mode = 7</td>
<td>Mean = 5.77 (s.d. = 1.93) Median = 6.0 Mode = 6</td>
<td>Mean = 4.87 (s.d. = 2.25) Median = 5.0 Mode = 5</td>
</tr>
</tbody>
</table>
Figure 29: Undergraduate student response: *The library helps me distinguish between trustworthy and untrustworthy information.*

Figure 30: Graduate student response: *The library helps me distinguish between trustworthy and untrustworthy information.*
Figure 31: Faculty response: The library helps me distinguish between trustworthy and untrustworthy information.

- “The library provides me with the information skills I need in my work or study.”

<table>
<thead>
<tr>
<th>Question</th>
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<th>Graduate Students (N=102)</th>
<th>Faculty (N=166)</th>
</tr>
</thead>
<tbody>
<tr>
<td>The library provides me with the information skills I need in my work or study.</td>
<td>Mean = 6.22 (s.d. = 1.76)</td>
<td>Mean = 6.25 (s.d. = 1.94)</td>
<td>Mean = 5.20 (s.d. = 2.17)</td>
</tr>
<tr>
<td></td>
<td>Median = 6</td>
<td>Median = 6.50</td>
<td>Median = 5.0</td>
</tr>
<tr>
<td></td>
<td>Mode = 7</td>
<td>Mode = 7</td>
<td>Mode = 7</td>
</tr>
</tbody>
</table>
Figure 32: Undergraduate student response: *The library provides me with the information skills I need in my work or study.*

Figure 33: Graduate student response: *The library provides me with the information skills I need in my work or study.*
Promotion and Awareness of Library Services

In an attempt to measure expectations for making users aware of library developments, the statement, “Library keeping me informed about all of its services” was asked. Figure 35 summarizes the responses to this statement.

The one-way analysis of variance demonstrated that there were significant differences among the three means for **Minimum** ($F(2, 670) = 6.904, p = .001$) and **Perceived** ($F(2, 670) = 4.928, p = .008$) responses as well as the mean **Adequacy** gap ($F(2, 670) = 6.293, p = .002$). There were no significant difference among the groups for **Desired** response.
Further investigation of these differences using contrast testing revealed significant differences among the means for the Minimum level of service response between undergraduate and graduate students ($t(670) = 3.652, p<0.001$) and between graduate students and faculty ($t(670) = 2.097, p = 0.036$). Means were also significantly different in the Perceived response between undergraduates and faculty ($t(670) = 2.284, p = 0.023$), and between graduate students and faculty ($t(670) = 3.033, p = 0.003$). Significant differences were also found between the means for Adequacy between undergraduates and graduate students ($t(670) = 2.029, p = 0.043$), and between undergraduates and faculty ($t(670) = 3.298, p = 0.001$). (See Appendix H)
Document delivery and interlibrary loan services.

To determine expectations for service with respect to interlibrary loan and document delivery, users were asked to respond to the statement, “Timely document delivery / interlibrary loan.” Figure 36 summarizes the responses to this statement.

<table>
<thead>
<tr>
<th></th>
<th>Undergraduates</th>
<th>Graduate Students</th>
<th>Faculty</th>
<th>Library Staff</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Desired</strong></td>
<td>7.79</td>
<td>8.45</td>
<td>8.16</td>
<td>8.39</td>
</tr>
<tr>
<td><strong>Minimum</strong></td>
<td>6.30</td>
<td>7.26</td>
<td>6.97</td>
<td>7.13</td>
</tr>
<tr>
<td><strong>Perceived</strong></td>
<td>6.94</td>
<td>7.53</td>
<td>7.29</td>
<td>8.00</td>
</tr>
</tbody>
</table>

Figure 36: “Timely document delivery/interlibrary loan”: Mean scores for Minimum, Desired, Perceived levels of service

The test for homogeneity showed that there was heterogeneity of variance in the responses for Minimum, Desired and Perceived expectations. As a result, a more stringent test for significance ($\alpha = .01$) was used for the ANOVAs in this area. Significance was indeed achieved when analyses were run for all three categories of response: Minimum levels of service ($F (2, 499) = 13.758, p<0.001$), Desired levels of service ($F (2, 499) = 8.509, p<0.001$) and Perceived levels of service ($F (2, 499) = 5.399, p = 0.005$). There was no significant difference found with respect to the mean Adequacy scores.

The contrast testing revealed the difference in means was between undergraduate students and graduate students in all three categories of response: the Minimum response ($t (193.042) = 5.023, p<.001$), Desired response ($t (272.902) = 4.997, p<.001$), and Perceived response ($t (233.630) = 3.644, p<.001$). (See Appendix I)
General Satisfaction

The final category of response was with respect to general satisfaction where respondents rated their levels of general satisfaction with respect to treatment, support and overall satisfaction on a scale of 1 (strong agree) to 9 (strongly disagree).

- *In general, I am satisfied with the way in which I am treated at the Library.*

<table>
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<th>Faculty (N=166)</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>In general, I am satisfied with the way in which I am treated at the library.</em></td>
<td>Mean = 7.20 (s.d.=1.54)</td>
<td>Mean = 7.59 (s.d. 1.54)</td>
<td>Mean = 7.00 (s.d.=1.88)</td>
</tr>
<tr>
<td></td>
<td>Median=7</td>
<td>Median=8</td>
<td>Median=7</td>
</tr>
<tr>
<td></td>
<td>Mode = 8</td>
<td>Mode = 8</td>
<td>Mode = 8</td>
</tr>
</tbody>
</table>

Figure 37: Undergraduate student response: *In general, I am satisfied with the way in which I am treated at the library.*
Figure 38: Graduate student response: In general, I am satisfied with the way in which I am treated at the library.

Figure 39: Faculty response: In general, I am satisfied with the way in which I am treated at the library.
In general, I am satisfied with library support for my learning, research and/or teaching needs.

<table>
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<th>Graduate Students (N=102)</th>
<th>Faculty (N=166)</th>
</tr>
</thead>
<tbody>
<tr>
<td>In general, I am satisfied with library support for my learning, research, and/or teaching needs.</td>
<td>Mean = 6.71 (s.d.=1.69)</td>
<td>Mean = 6.85 (s.d.=1.95)</td>
<td>Mean = 5.52 (s.d.=2.16)</td>
</tr>
<tr>
<td></td>
<td>Median = 7</td>
<td>Median = 7</td>
<td>Median = 6</td>
</tr>
<tr>
<td></td>
<td>Mode = 7</td>
<td>Mode = 8</td>
<td>Mode = 5</td>
</tr>
</tbody>
</table>

Figure 40: Undergraduate student response: In general, I am satisfied with library support for my learning, research, and/or teaching needs.
Figure 41: Graduate student response: *In general, I am satisfied with library support for my learning, research, and/or teaching needs.*

Figure 42: Faculty response: *In general, I am satisfied with library support for my learning, research, and/or teaching needs.*
How would you rate the overall quality of the service provided by the library?

<table>
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<th>Graduate Students (N=102)</th>
<th>Faculty (N=166)</th>
</tr>
</thead>
<tbody>
<tr>
<td>How would you rate the overall quality of the service provided by the library?</td>
<td>Mean = 6.99 (s.d.=1.38)</td>
<td>Mean = 7.11 (s.d.=1.40)</td>
<td>Mean = 6.31 (s.d.=1.76)</td>
</tr>
<tr>
<td></td>
<td>Median = 7</td>
<td>Median = 7</td>
<td>Median = 7</td>
</tr>
<tr>
<td></td>
<td>Mode = 7</td>
<td>Mode = 7</td>
<td>Mode = 7</td>
</tr>
</tbody>
</table>

Figure 43: Undergraduate student response: How would you rate the overall quality of the service provided by the library?
**Figure 44:** Graduate student response: *How would you rate the overall quality of the service provided by the library?*

![Graph showing the distribution of responses with mean 7.11 and standard deviation 1.399.](image)

**Figure 45:** Faculty response: *How would you rate the overall quality of the service provided by the library?*

![Graph showing the distribution of responses with mean 6.31 and standard deviation 1.76.](image)
Library Use

One final set of questions were included in the LibQUAL+™ survey to ascertain users’ user of the library, the library website, and the use of non-library gateways, such as Google™ or Yahoo™. While the responses provide some indication of how users access information, it is difficult to know if the frequencies are as discrete as might be preferred. For example, it is possible that a user might opt to jump to, for example, Google™ from the library web site while using a computer located in the Library. How would one respond in this situation?

- **How often do you use resources on library premises?**

![Bar chart showing frequency of use per frequency]

**Figure 46: How often do you use resources on library premises? Percentage of users per frequency**

Undergraduates are the most frequent users of the Library onsite with 61.8% of undergraduate respondents indicating they use the Library onsite either daily or weekly. This is contrasted with graduate students where approximately 51% of the respondents use the Library onsite either daily or weekly while faculty are the least frequent of the academic users to use the Library onsite with approximately 46% of faculty respondents indicating the visit the Library either daily or weekly.
"How often do you access library resources through a library Web page?"

Figure 47: How often do you access library resources through a library Web page?
Percentage of users per frequency

Graduate students appear to be the most frequent users of the Library web site with over 90% of the graduate student respondents indicating that they access library resources in this manner on either a daily or weekly basis. Approximately 80% of faculty respondents indicated they accessed resources through the Library’s web site while approximately 58% of undergraduate student respondents indicated their frequency of use as either daily or weekly.
Figure 48: How often do you use Yahoo™, Google™, or non-library gateways for information? Percentage of users per frequency

One might have expected undergraduate students to be the biggest users of non-library gateways when seeking information resources. Interestingly, faculty proved to be the biggest users of this form of access with approximately 92% of faculty respondents indicating they use generic search engines and other non-library gateways when seeking information. Meanwhile, 85.32% of undergraduate and 85.3% of graduate student respondents indicated use of this form of access on a daily or weekly basis.

Comparisons were also done by user group comparing how frequently the used the various resources suggested. The pattern of access was replicated across all user groups.
• By user group, Undergraduates

![Bar chart showing library use frequency by undergraduates]

Figure 49: Library use Summary for Undergraduate students

Examined in this way, it is clear that non-library gateways are the most frequently used form of access by undergraduate students with 85.32% of undergraduate respondents indicating a daily or weekly use of this form of access. Meanwhile, approximately 62% of undergraduate students indicate a daily or weekly use of the library onsite with approximately 58% of the respondents indicating daily or weekly use of the library website as a means of access.
By user group, Graduate students

Figure 50: Library use Summary for Graduate students

90% of graduate respondents use the library web site on a daily or weekly basis to search for information. This is followed by the use of non-library gateways as indicated by 85.3% of graduate respondents who indicated daily or weekly use of this form of access while only 51% of the graduate respondents indicated daily or weekly use of the library onsite.
• By user group, Faculty

![Graph showing library use frequency by faculty]

**Figure 51: Library use Summary for Faculty**

Approximately 92% of faculty respondents access information using non-library gateways on a daily or weekly basis while approximately 80% of the respondents use the library website on a daily or weekly basis. Only about 46% of faculty respondents access information resources on site in the library on a daily or weekly basis. However, this more frequent use of the library is perhaps impeded by workload issues or other such events since and additional 34.34% of faculty respondents indicated they visited the library at least on a monthly basis.

**Comments**

A total of 410 respondents chose to supplement their survey response with comments. While there was much praise for the library facility the major concerns seemed to be around noise and around hours of operation.

There was also much praise for the Library staff, the most frequent positive comment relating to their helpfulness. However, respondents did express concern about staff attitudes, knowledge and competency, loudness, and sensitivity to user needs.
Those respondents commenting about the Library’s collection expressed concerns about the currency, breadth, and depth of the available collection. Most offered stated a preference for electronic delivery, especially for journals, and many felt that interlibrary loan was an excellent service but they had to depend on it too often to support their research and learning.

**Comparisons to other libraries**

One benefit of participating in LibQUAL+™ is the ability to benchmark one library against a peer group of libraries. Of course, this is contingent on there being libraries of similar mandate and size against which to compare and any participating library does not know what other libraries will be participating before they sign up for their own survey run.

In seeking a comparable libraries, the we looked for the following characteristics:

- Canadian libraries
- Comparable size
- Comparable institutional mandate

Unfortunately, there were no libraries against which the University of Lethbridge could legitimately compare their results. The closest match was the University College of the Fraser Valley in British Columbia. However the educational mandate of this institution is more technically focused compared to the University of Lethbridge’s liberal education focus so benchmarking against this institution was not pursued.

Selective comparisons of our results were made to the University of Calgary and the University of Alberta taking into consideration that these sister institutions were not part of the 2005 LibQUAL+™ survey run. As well, both of these library systems are part of the Canadian Association of Research Libraries, a group for which the University of Lethbridge does not qualify on the basis of size.