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Click It, No More Tick It: Online Reference Statistics
Paulita Aguilar, Kathleen Keating, and Sue Swanback

Abstract
This article describes the creation of an online reference intake form that collects statistics and provides detailed reports. Included is a practical application based on analysis of the Native American questions for collection development.

Introduction

There are many reasons libraries keep reference statistics: staffing issues, patron usage, organizations that require reports, such as the Association of Research Libraries (ARL). But what can a simple "tick" on an hourly sheet really tell us? Using today's technology, libraries can gain new insights on how we gather statistics. Because reference interactions are on the decline, more meaningful statistics are necessary (ARL, 2008). We need to discover new ways to gauge the needs of our patrons and employ concrete data to make decisions. To improve our statistical collection process, we analyzed the current collection gathering methods at the University of New Mexico, University Libraries (UL) in 2006-2007. The outcome of this analysis was an online form that has allowed the UL to examine our users' questions and modes of communication. In addition to using these figures for staffing, signage, and ARL, we also use them for developing collections, acquisitions, training, and data trends analysis. The UL used the statistical database to compile data about how our users are contacting us and their research subjects. Armed with this analysis, the UL is in a better position to "meet the users where they are" and connect them with Subject Specialists and other valuable resources.

Self-Analysis and Planning

In September of 2005, the UL conducted a self-analysis that produced an environmental scan titled, "White Paper: Landscape of data gathering and analysis at the University Libraries," by Tamara McMahon. This white paper was instrumental in identifying the primary reason for collecting reference statistics: the Association of Research Libraries (ARL) annual report. Each year, many people spent hours compiling the "ticks" on paper statistical forms for the ARL. While this resulted in a comprehensive collection of data, it was not always accurate or efficient. Information was not consistently recorded and methods for data gathering varied from year to year. Perhaps, most importantly, the data gathering methods did not provide the UL with a good understanding of user needs and behaviors.

The 'White Paper" also indentified that the UL gathered reference statistics at each branch library and many, but not all, departments recorded reference transactions. Gathering and analysis techniques varied at multiple locations that record reference statistics: Zimmerman Library (Humanities, Social Sciences and Government Information), Parish Memorial Library (Business, Economics and Management), Centennial Science and Engineering Library, Fine Arts and Design (Art, Music, Dance, and Architecture) and the Center for Southwest Research (Special Collections and Archives). Email or in-person encounters away from the reference desk were not always collected. In addition, not all departments reported interactions which could be classified as reference questions. For instance, the UL Library and Information Technology Department did not record or report their interactions with the public in cases where they provided technological assistance. The same was true for our Electronic Resources

Department that often assisted patrons with e-journal issues. In addition, statistical forms from the branch libraries were not consistent. For example, some collected email reference questions and some did not. Some branch libraries distinguished between questions from University of New Mexico (UNM) faculty, staff, students, and those of the outside community, and some did not.

Recommendations set forth in the "White Paper" included setting standards, conducting surveys and focus groups, and centralizing statistics. Setting standards for collecting reference statistics take into account which departments should collect and report statistics. Other issues addressed include modes of communication from patrons, such as an accurate recording of all chats and emails, plus all interactions with a Subject Specialist when the reference transaction took place away from the traditional reference desk. By adhering to these set standards, statistics can provide a more accurate count for the UL as a whole.

While it is important to acknowledge how many people the UL helps, it is also key to know if our interactions are useful to patrons. Counting numbers alone does not translate into an evaluation. Conducting surveys and focus groups will provide insight into the usefulness of our interactions, whether in person, via chat or email. Our Virtual Reference Desk, otherwise known as "Ask a Librarian," currently uses the RightNow® software for all incoming chats and emails. The system automatically surveys and collects information regarding patron satisfaction. The UL is still in the process of conducting in-person evaluations at the reference desks.

Once the standards were set, the UL expanded the collection of centralized statistics with an online form that could be accessible anywhere with an Internet

connection. This centralized the way all branches, departments, and individuals collected reference encounters.

Statistical Form Design Development and Function

Development of the online statistical form began through a series of four library-wide open forums, "Let's Talk Statistics," in fall 2006. During open sessions all UL employees were encouraged to discuss what type of statistics would be most useful to collect. Each branch library received visits during a staff meeting to understand individual library needs. In this investigative process, the first form proposed was not a success: there was too much data to enter. Through conversations, we unanimously agreed that the form had to be very easy to use. We took suggestions from the reference librarians and created the current form. As a result of this dialogue, the UL established the following criteria:

- Location – Each branch library or department can have as many locations as needed, such as, a traditional reference desk location or an alternative location away from the desk. For instance, two or more locations exist in each branch library: Zimmerman Reference Desk (located on the first floor), Zimmerman Basement Reference Desk, and Zimmerman Offices/Remote Location. Departments have one site such as EResources, and "Ask a Librarian." (See Figure 1.)

Figure 1 – Sample Location Form
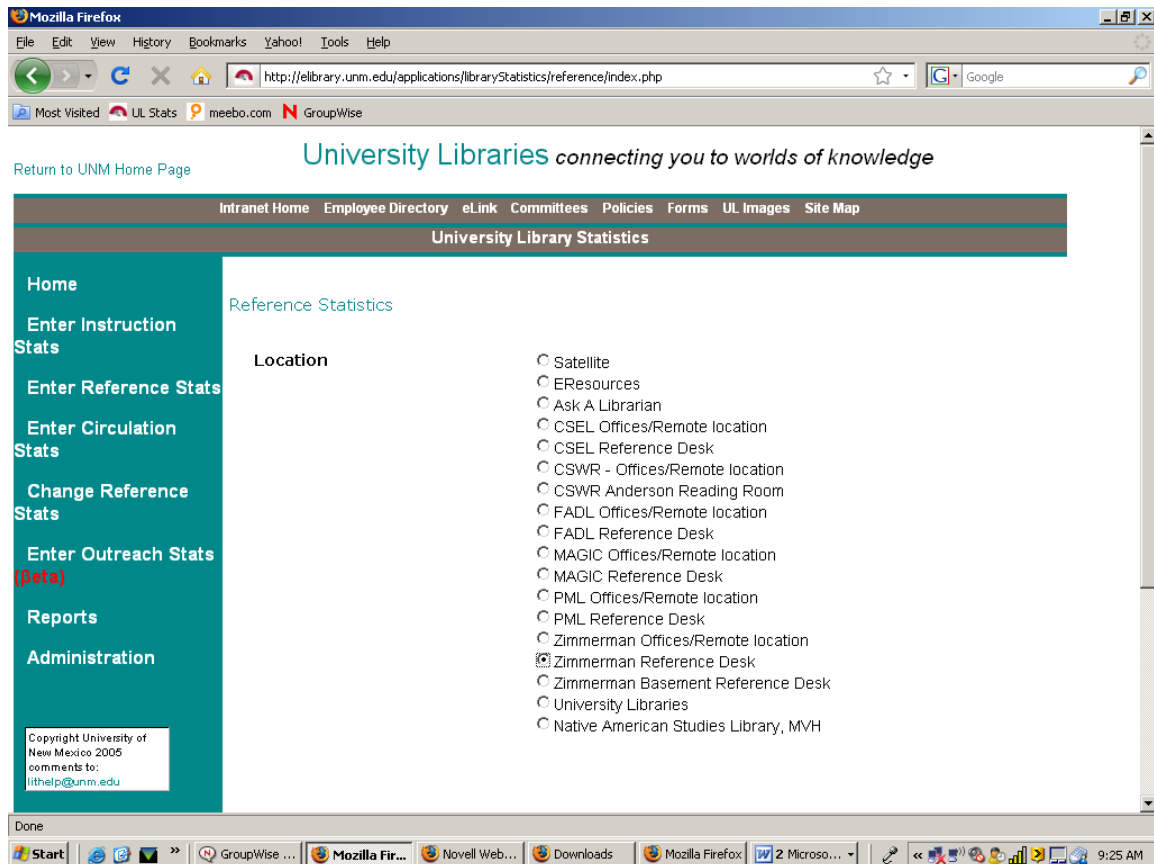
- Mode of Communication – **Required Field**. It was important to record how our users were contacting us so we created the following categories: "Live" for in-person transactions, Phone, Email, Chat and other for letters, etc. (See Figure 2.)

- Type of Question – **Required Field**. In Debra Warner's (2001) article "A New Classification for Reference Statistics" the author established a set of categories for type of reference questions. They include: Directional, Ready Reference, Technical, Strategy, Consultation, and Referral. Definitions for each of the above categories are detailed on the form.

- NetID – **Required Field**. The NetID is a unique UNM Email address that identifies individuals as they enter the reference statistic.

- Subject Categories: **Optional Field.** This is an alphabetical list of subjects.

- Specific Subject Categories: **Optional Field.** Because each branch library and department had specific needs and different frequently asked questions, this field could be customized to meet individual requirements. For example, the Parish Business Library includes FAQs such as Company Information, Industry Ratios, and the <u>Wall Street Journal</u>, while the Centennial Science and Engineering Library has Biology 124, Chemistry 303, and Patents as specific subjects.

- Subject/Notes Field: **Optional Field.** The Subject/Notes field is a box in which librarians can enter in a question and provide an answer. Staff members are not required to respond. However, we find that UL employees will take the time to enter the question and provide the answer.

Figure 2 – Sample Reference Statistical Form

All of the above criteria are collected and time/date stamped into the database. The Reporting function of the database allows for sorting of information by time, date, type of question, mode of communication, NetID, location, subject, and Subject/Notes field. If a librarian wants to see how many questions she has answered in a week, a semester, or an entire year she can do so in the Reporting function. Sample training topics for library instruction or in-service training can be extracted from the database. Librarians, staff and administrators can also download statistics and manipulate the data in Excel for analysis.

The E-resources Department and Zimmerman Library staff were part of the pilot project that began in March of 2007. We conducted training on how to access the database and use the form during staff meetings. An important aspect of the training

emphasized the ease of entering statistics, which was a major concern for reference staff. The pilot project was very successful and on June 1, 2007, all UL branch libraries and departments came on board. Today, entering reference transactions is second nature to all staff. Staff took ownership of their reference transactions and included this data in the Subject/Notes field. This provides the UL with detailed information about what students are researching, how they are seeking information, the modes of communication and research trends.

Technical Implementation

The UL implemented this tool as a web-based, database-driven application using Open Source tools, building on the infrastructure developed by the UL Information Technology (IT) department over the past several years. The database is stored on a MySQL server and is accessed by PHP programs running on an Apache web server. Both database and web servers run on Linux-based virtual servers under VMware ESX Server.

The web pages that comprise the application are built using HTML forms laid out using Cascading Style Sheets and embedded into Dreamweaver templates. This contributed to the ease of maintenance and enhanced the look and feel of the database. A PHP code is used to build form elements for data entry, store the data to the database, and manipulate the data for reporting.

The web-based platform was chosen to allow the use of a centralized database repository with a distributed data collection function. The libraries are physically and geographically dispersed across networks, and a browser-based application allowed the greatest flexibility and ease of deployment.

There are three aspects to the software:

1) Administration

2) Data Entry

3) Reporting

The Administration portion of the software allows the librarian-administrator to define the values of interest on the data-entry forms. For example, the subject areas the library tracks are defined by the administrator and can be added and updated as needs change. The application design requires minimal intervention by IT personnel. All possible data input parameters are defined by administrators, using the web-based administrative forms.

The Data Entry aspect of the software consists of forms that are used by reference librarians and others to record reference interactions. Streamlined input forms are used at reference desks and off-site locations. Another more full-featured version is available for making corrections to existing entries. The third is for special locations, one of which is Circulation desks. Circulation personnel often perform reference functions when reference desks are closed. The reporting function provides an analysis on how to address staffing needs.

The Reporting portion of the software allows anyone in the UL to build dynamic reports against the database using defined parameters such as date, NetID, and location. This allows librarians the ability to do ad hoc reporting without requiring technical assistance. The defined reports include some basic drill-down capabilities and are largely two-dimensional matrixes of total counts. If the pre-defined report formats do not suffice, the requested reports and datasets are also available as downloads in CSV format for

Excel manipulation. The UL protects the integrity of the statistics data by protecting the database and web servers against intrusion, corruption, and data loss. Using industry's best practices, protection is secured by the library's IT Department.

To secure the data entry forms on the web, directory-level configuration files called htaccess files are used by the web server to control those who may enter reference data. The administrative forms are also protected by htaccess files and are only available to administrators. The reporting function resides on the library's intranet server and is available to all library personnel who can log on to the intranet.

The database design was implemented to serve future unspecified needs in a flexible manner. The administrator for the statistics database is responsible for understanding how the statistics are gathered and used, for coordinating requested changes among the user population, and ensuring the integrity of the data by promoting a common understanding of policies and procedures.

Programming assistance is only needed when setting up an entirely new statistical entry screen or if new data elements need to be added to existing screens. The programmer creates the data entry screen and assists the administrator in choosing the best way to define the information to be captured. The programmer also writes the reporting function. Once these are set up, the administrator can manage the ongoing adjustments without technical assistance.

Due to interest from other libraries in obtaining this application, the UL has created a repository for the code and documentation in its Dspace archive. This may be accessed at https://repository.unm.edu/dspace/handle/1928/6979.   In addition, a limited working model may be found at http://elibrary.unm.edu/applications/demo/libraryStatistics/. This

model was altered to disallow data entry, but can be used to demonstrate how the UL executes this package. The application is released under the Creative Commons Attribution-Noncommercial-Share Alike 3.0 United States License.

Using Database Reference Questions for Collection Development

The Native American Studies Subject Specialist used the new statistical database to analyze reference questions collected on Native American and Indigenous topics to identify research trends for collection development. Using the pre-set Subject Headings in the pull-down "Select subject" fields, such as "Native American Studies-Apaches," the librarian can assess all questions gathered at all locations related to this area. The Subject/Notes field is an optional box in which librarians can enter a question and provide an answer if they want. Fortunately, most staff takes the time to give an overview of the patrons' needs or questions, and this information is useful for collection development. From the report module, a Subject Specialist/Librarian can choose any time period for the report, and in this case, six-months is sufficient.

In addition to basic selection techniques (Taylor, 2004), including "knowing the library's community," the Subject Specialist for Native American Studies uses the collected data to identify materials to add to UL collections. To our Subject Specialist, the data reveals new areas of research or trends that create a richer and more useful Native American Studies collection. During times of reduced collection budgets – a problem all libraries face today – purchasing only materials in high demand for researchers is fiscally responsible.

Traditional collection development tools, including familiarity with publishers of information resources, reading reviews from appropriate journals or magazines, and

knowing your patrons are all common practices. While becoming familiar with information sources can lead to a solid approval plan that can save time and identify quality books, it may not reflect the current research interests of students. In addition, many information sources can lead Subject Specialists to major presses that may produce titles that do not reflect contemporary Native American communities. Traditionally, university presses publish titles that highlight historical events/peoples, rather than focusing on current Native American issues. For instance, books addressing topics such as "planning on tribal lands" or "methamphetamine use on reservations" are obscure.

Obtaining materials that reflect the current research interests of patrons provides a more up-to-date and useful collection. However, using reference questions for collection development can be a time-consuming process, but there are positive aspects. For example, we discovered that students want more materials published directly by tribal sources. A simple "tick" would not have given us this information and this fact would have gone unnoticed. The amount of time devoted to this task will depend on the number of questions received in a given time period or the report review period chosen by the Subject Specialist.

In this particular case, the Subject Specialist reviews all reference questions related to Native Americans and Indigenous peoples at least twice a year. After running reports, questions are categorized by unique topic areas: cultural identity, indigenous health, tribal government, etc. The next step involves searching for materials on Amazon.com, publishers' catalogs and organizations that publish specifically for their membership, such as the National Indian Gaming Association, Native American Rights Fund, Alaska Native Knowledge Network and other tribal resources.

Reviewing database reference questions revealed to our Subject Specialist that addressing the needs of researchers is essential. To date, the reference questions report revealed three unexpected needs. It emphasized the demand for more visual materials. It seems that many contemporary topics, including teenage Native American identity are addressed through multimedia productions by young Native American filmmakers. Undergraduates and faculty also find visual materials to be an excellent alternative to obtain an overall perspective on a topic. Secondly, our Subject Specialist also discovered that students were not finding cataloged sources in the OPAC because of unfamiliarity of LC subject headings. To alleviate this, UL catalogers are now including alternative subject headings that are more familiar to students. The third finding is the need for more materials produced by the tribes themselves. For example, tribal planning reports discussing sustainable development or transportation planning on reservations. These findings would not have happened in an efficient manner without the aid of the reference statistical database.

Evaluation

After the inception of the online reference intake form and database in spring 2007, no formal survey or follow-up evaluation was conducted until spring 2010. An internal survey was conducted for a period of one week and feedback was sought from all reference statistics database users in March 2010. Statements were enlightening and varied among users. While the majority of comments were positive, we did identify areas for improvement and more training.

Positive Comments
- The form decentralized input, standardized the information collected, and made analysis infinitely easier.

- Instructors have used the reporting function to look up real-life examples for use in training and instruction.
- Staffing decisions and allocating personnel at branches was analyzed.
- A majority agree that collecting and entering statistics is a lot easier.
- There is more uniformity in data gathering. A minimum of key stokes is a plus!
- In the past, this quantity and quality of information was not collected.
- Many staff members used the reporting function to prepare for annual reviews and other administrative reports. Reports reflect numbers of questions answered during any time period, types of questions, subjects of questions, and all comments entered.
- The Subject/Note box field contains questions and answers to be viewed in the reporting function or downloaded into an Excel file for further analysis. This is useful in preparing for instruction classes and collection development.

Suggested Improvements
- Many librarians are on the go, or are embedded in their departments, and now want an application for mobile technology, like an iPhone application.
- Rename "specific subject list" dropdown menu according to location or services offered.
- Include the ability to select multiple subjects, or more descriptive categories/topics, when dealing with interdisciplinary questions.
- On an annual basis, survey all reference database users to discover ways of improving the database.

Training to Address
- Update and correct statistics after entering.
- Download and manipulate data in Microsoft Excel.
- Use reporting functions for collection development.
- Establish regular training for new personnel.

Conclusion

The reference statistical database has standardized and centralized the way UNM University Libraries collects statistics for ARL and administrative reports. The UL no longer spends hours of staff time compiling the statistics because it only takes a few minutes to retrieve the data for ARL or other reports. For individual librarians, reports generated by the database assist them with annual reports, collection development, and reference trends in subject specialties. Supervisors can analyze the reports for staffing reference desks and monitoring staff performance. For example, the UL noticed that

between 5-8 p.m., the number of questions on the "Ask a Librarian" were increasing. After analyzing the reference statistical report and using actual data, we increased the number of personnel during this time period.

In the beginning, the database was created to standardize statistics, but we have uncovered a wealth of new information. For example, through analysis, we have discovered Frequently Asked Questions, research trends, in-depth reference service, types of referrals, and needed areas for improvement. All of the above has benefited the students and provided concrete information to the UL administration and staff. Gone are the days of "tick" marks counted by hand and never analyzed. Now UL staff use web technology to gain knowledge about library users, and incorporate this data to make informed decisions to provide better services and resources for students. This revolutionary tool continues to carry the UL into the twenty-first century in data collection.

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