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Practice

Getting Started With Electronic Reference Statistics

Case Studies and Best Practices for Collection and Analysis

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Collecting reference statistics is an important facet of academic librarianship. Having accurate, shareable data about the services a library provides is key to understanding the needs of users and highlighting the importance of the library within the overall institution. While many libraries collect reference statistics on paper, gathering this data using an electronic statistics system is an efficient and customizable way to track and analyze reference service trends. By detailing Neumann University Library and Harrell Health Sciences Library's experiences with two different but equally effective systems, this article will explore the complexities of implementing, customizing, and analyzing the data from an electronic reference statistics system. The authors also discuss challenges encountered and offer recommendations and best practices for others wishing to explore electronic reference statistic collection.

Introduction

Librarians have always explored different measures to demonstrate their worth and the value they provide. Collecting statistics about the type and volume of reference transactions is a long-standing practice. Traditionally this was accomplished using paper-based collection systems, which require data entry or manual calculation in order to review trends, and typically provide a minimalistic picture. As technology advanced and new data-gathering

programs were developed, many libraries have switched to electronic systems for collection and analysis of reference transactions. While there are many advantages to collecting reference statistics electronically, the system implementation and actual metrics collected do not always provide the desired richer picture of the breadth and quality of library reference services.

The Association of College and Research Libraries (ACRL) *Value of Academic Libraries* report (Oakleaf, 2010) and other subsequent literature discussing the need to demonstrate how libraries contribute to academic and institutional success have inspired many to find new methods of assessment. While collecting data for required annual reports provides some useful information, the desire to find new ways to demonstrate library value has been fueled by the increased ability to collect richer data using electronic systems. There is increasing external pressure to demonstrate value and therefore a need to gather data that is meaningful to outside stakeholders (Lewin & Passonneau, 2012). Exploring ways to gather more descriptive reference statistics can provide valuable insights about user needs and is a good first step when considering new ways to demonstrate library value.

A number of systems are available to capture and analyze reference statistics electronically. Some are commercial products designed specifically to capture library reference statistics, such as Desk Tracker from Compendium Library Services (Todorinova, Huse, Lewis, & Torrence, 2011), DeskStats from Altarama (Northam, 2012), Gimlet from Sidecar Publications (Bailey, Swails, & Tipton, 2012), and LibAnalytics/Reference Analytics from Springshare (Flatley & Jensen, 2012; Stevens, 2013). Libraries with stronger technical capabilities may develop in-house systems using database programs such as MySQL or Microsoft Access (Aguilar, Keating, & Swanback, 2010; Garrison, 2010). There are also free options, such as Libstats (Jordan, 2008). Some librarians design forms using customizable survey products, such as the form capability of Google Drive, Survey Monkey, and form options in website content management systems, such as Drupal and Wordpress. While there are different technical considerations for each product, the considerations outlined here apply regardless of the product chosen to collect data.

Neumann University Library (Neumann) and Harrell Health Sciences Library (Harrell HSL) both transitioned from a paper-based reference statistics collection system to an electronic system, a process that has both challenges and substantial benefits. The authors of this article are responsible for coordinating system use, data collection, and analysis for these systems. Neumann uses Reference Analytics, and Harrell HSL uses Desk Tracker. This article includes a discussion of the successful use and customization of these systems at each institution along with the joint challenges encountered and lessons learned.

Neumann University is a small, private university offering both graduate and undergraduate degrees with one library staffed by five full-time librarians and six paraprofessionals. The circulation and reference desks are the only two service points, and Reference Analytics is used by all staff members.

Penn State Hershey is a college within the Penn State University system, which spans several different campuses. The Harrell HSL, staffed by eight full-time librarians, six full-time paraprofessionals, and several part-time circulation staff members, supports graduate and medical students, as well as clinical and academic faculty and staff. The reference and circulation desks are the two primary service points. Librarians also provide user services from their offices. Desk Tracker is configured as a shared system for use at service points at all campuses throughout the Penn State University Libraries system, but analysis can be performed at a local level as well as system-wide.

Neumann University

Implementation

Neumann University Library used a paper-based statistics system for approximately two years before switching to an electronic system. The paper system tracked length of transaction and categorized each as either "tech" or "reference." However, this paper system had a few major drawbacks. The two categories, tech and reference, were too broad, participation from part-time and full-time reference and circulation staff members was sporadic, and inconsistency was high in both reporting and collecting. Due to these limitations, the analysis of collected data was minimal.

After attending a presentation by Flatley (2011) at the Pennsylvania Library Association Annual Conference about the LibAnswers and Reference Analytics products from Springshare, the author recommended their implementation at Neumann Library to improve data gathering. The library director was very supportive of the initiative. LibAnswers, a knowledgebase and e-mail question management platform, and Reference Analytics, the statistics-gathering and analysis system, were adopted by the library in January 2012, prior to the start of the spring semester. While Reference Analytics and LibAnswers are integrated products and both have improved service, the focus of this article is on Reference Analytics, which collects reference statistics and analyzes the data.

The motivation for adopting this system was to present a fuller picture of diverse library services to the administration and to use the data to better inform staffing, scheduling, and other point-of-need decisions. While the library has a strong sentimental role at the university, we needed to raise our prominence on campus. The ACRL *Value of Academic Libraries* report (Oakleaf, 2010) resonated strongly at Neumann and collecting more robust data would help demonstrate the breadth and impact of the library for our community. By introducing the staff to Reference Analytics in light of this goal, staff members viewed the system as less of a chore and instead as part of an overall effort to improve the library.

Introducing and implementing any new system requires careful timing and instruction. The staff varied widely in technical expertise and, as previously mentioned, not all staff members were utilizing the paper statistics-gathering system. The decision was made to transition from paper to Reference Analytics just before the new semester began. This process went smoothly since the staff was able to attend a single training session held just two days before the transition and when the influx of questions would start. To reinforce the importance of participation, the staff discussed the importance of collecting reference statistics and why Neumann was implementing this new system. In addition to the training session, cheat sheets with tips and information on how to access the system were created to post at all service points.
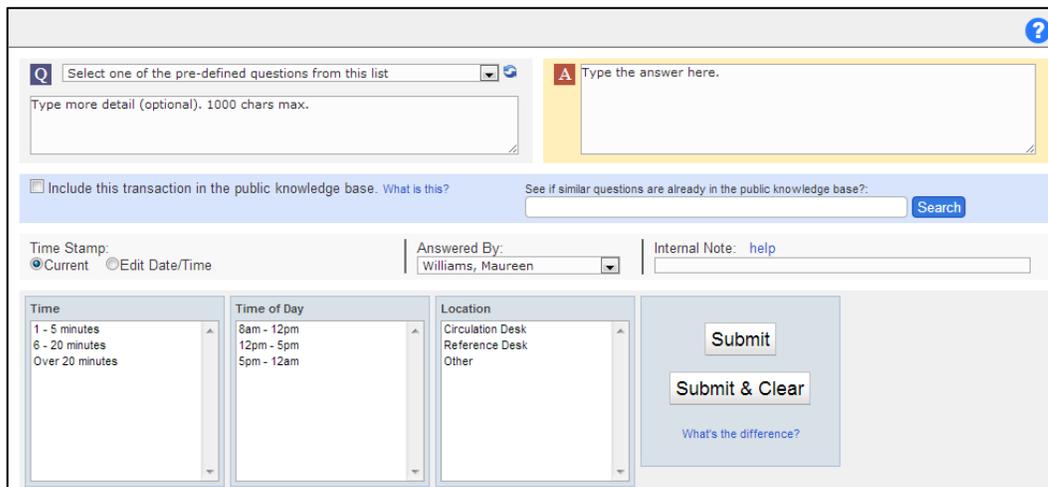
Reference Analytics is a web-based system that is accessed using a web browser. Staff members were asked to keep the Reference Analytics collection screen up at all times while they are working. Librarians were given personal usernames and passwords, while paraprofessional staff members all use a generic library login. The small staff size and limited work stations allow the system manager to gently remind staff members to open and use the system.

Customization

Optimizing customization to suit each unique library and its students is crucial to collecting statistics that will allow the assessment desired. Reference Analytics offers a skeleton system that is customizable to suit institution-specific needs. There is ample flexibility and all of the choices discussed here were made to best address the needs of Neumann University Library. Deciding how much data to collect is the primary challenge. As information professionals, it is tempting to collect detailed information about each transaction, resulting in a very

complex form. However, if the form is tedious and time consuming to fill out, low usage by staff may occur. This balance must be considered by any institution starting an online statistics tracking system.
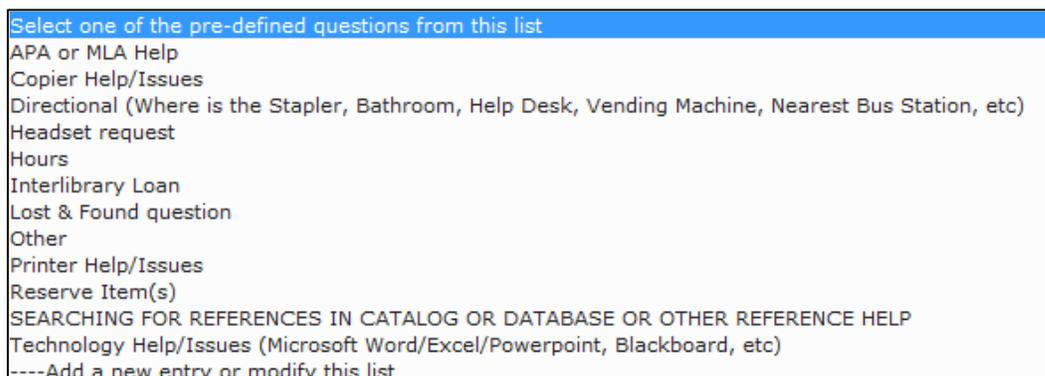
The form created was an attempt to gather relevant, measurable information, while still making the process of registering a typical transaction less than ten seconds (Figure 1). Neumann considered incorporating Gerlich's READ Scale (readscale.org) into the form to track the complexity of questions asked, a feature that our paper form lacked, but decided to focus initially on different elements for assessment. Staff members enable a drop-down menu and then choose a pre-defined question type. There are 11 pre-defined options, as well as an "other" option. The 11 options (Figure 2) were created to reflect the questions most frequently asked in the library, based on anecdotal evidence. While this list clearly includes transactions that would be considered "directional," in addition to the expected "reference"' transactions under the Reference and User Services Association's (RUSA) definition, Neumann elected to be very inclusive on what type of transaction would be recorded. Library staff select one of these categories, or "other," to begin recording a transaction (RUSA, 2008). Below the drop-down menu, there are boxes for optional qualitative comments. Staff members are encouraged to enter qualitative data, especially for particularly difficult or unique questions, but it was not required.

Figure 1

Neumann University Library Reference Analytics form. Staff members click on the down arrow at the top to view a drop-down menu and select a pre-defined question.

Figure 2

Reference Analytics drop-down menu. These selections were made to suit the needs of Neumann University Library.

Next users must select three standard pieces of data: length of transaction, time of day, and location (see Figure 3). Time of day has a time stamp feature, though users can manually change the time if they are entering a transaction much later than it happened. Location identifies the service point approached. Length of transaction is the most significant of these three data pieces as it allows librarians and administrators to see how much time each day is spent directly interacting with and helping students.

Figure 3

Data fields that are selected for each transaction entered into the system

Challenges

The first major challenge with any new system that is not inherent to job performance is buy-in. Initial concerns at Neumann about potential resistance to using Reference Analytics were unfounded as all staff members immediately began using the system regularly. There were 1,795 questions recorded from January 2012 to May 2012 using Reference Analytics. For the same time period in 2011, 1,249 questions were recorded using the paper system. The 2012 numbers reflect a 30% increase. Due to the short time period, it is more likely that the increase in questions is due to increased tracking than an increase in user traffic. While initial buy-in was not a problem, consistent use needs regular encouragement. E-mails are sent about twice a semester to staff members to remind them to log statistics.

Another challenge involves data entry. The Reference Analytics form can be submitted without any data entered in the fields, so the system just takes a count. This helps track volume of questions, but minimal data does little to contribute to a full report of library services. It is possible that staff members scrimp on entering data when it is very busy, or when they are retroactively entering transactions into the system.

Transaction length ranges also create challenges for data collection. Options available are 1-5 minutes, 6-20 minutes, and over 20 minutes. These broad categories are a simple breakdown of transaction length (Figure 4), but when compiling data to see how much time was spent helping patrons, the numbers are estimates. Reference Analytics does not automatically calculate transaction time since this is a custom data field. When performing manual calculations, the ranges are averaged at 3 minutes, 13 minutes, and 25 minutes. This provides consistency but not the best accuracy. Also, all interactions that last significantly longer than 25 minutes (anywhere from an hour to several hours) are not captured accurately. These transactions have no true place in the current data form and represent significant professional or intellectual work by the librarian.
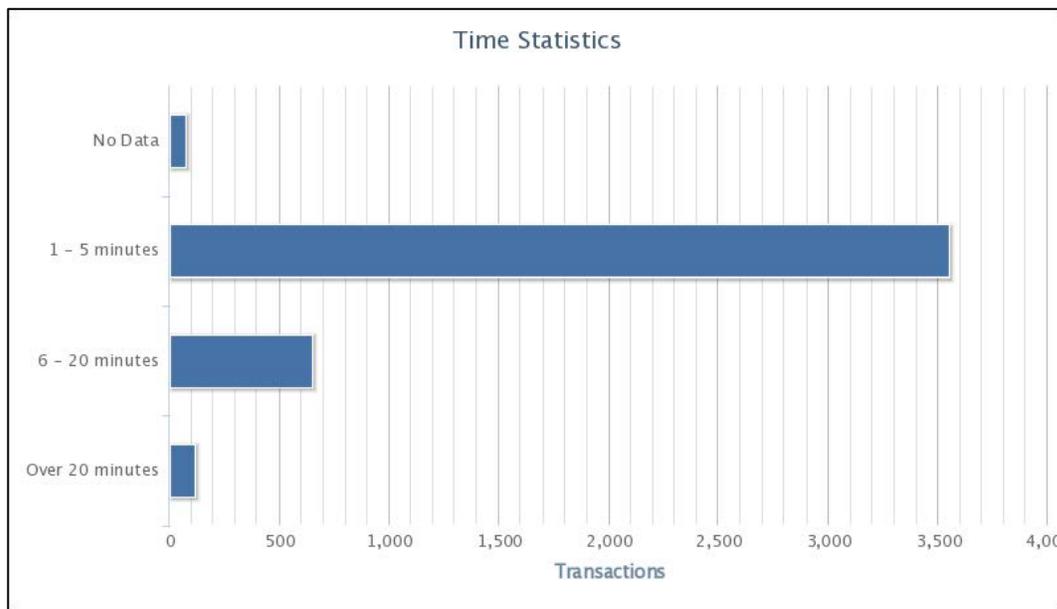
Time Statistics

Figure 4

Question time ranges as automatically generated by the Reference Analytics system

Results and Analysis

Collecting and analyzing results has been the most significant part of Neumann University Library's switch to Reference Analytics. Each of the 12 months during 2012 showed an increase in transactions recorded compared to the same month in 2011. This is a testament to the ease of the system and to staff participation. However, merely having a higher, more accurate number of transactions recorded has little meaning if more substantial analysis is not undertaken.

As seen in Figure 2, the transaction type "searching for reference in catalog or database or other reference help" appears in all capital letters in the drop-down menu since this is the primary work of the library. One of the main goals of using this system was to see how much of the staff's time is spent helping with research. "Searching for references in catalog or database or other reference help" has accounted for 24.38% of the questions recorded by the Reference Analytics system. At first, it was a bit disconcerting to see that only a quarter of the questions asked are for research help, but further analysis sheds light on other issues at play. Eight percent of the research questions were transactions over 20 minutes long, by far the highest percentage of long transactions for any question type. So even though the number of research questions may be smaller than anticipated, the time spent addressing research questions is very high.

Furthermore, "MLA and APA help," "reserve item(s)," and "interlibrary loan" are separate categories from the main research option. If these are included in the analysis of research transactions, the percentage of the total transactions recorded is up 10.33%. This type of data analysis would never have been possible with the paper-based system. However, it does require careful examination of the results to find meaning and trends.

Beyond looking at the research services provided by staff members, the inclusion of other question types on the form allows us to see (and share with administrators) the work that we do for students outside of the traditional library scope. Twenty-one percent of transactions recorded have been "printer help/issues" or "technology help/issues." Since Neumann University Library is not part of the Information Technology (IT) Department and we

do not have an IT staff member, this highlights the services provided to students in the library that are outside the staff's training. The other miscellaneous categories serve a purpose as well. Even giving students directions, helping them make a copy, or helping them find a lost item is contributing to the overall campus experience. These may not be official library duties or responsibilities, but they illustrate the diverse range of services we offer.

While this type of analysis is informative, it serves little purpose if it is not disseminated to stakeholders. Reference statistics are reported monthly to the Neumann University Library director and now include the total number of "searching for reference in catalog or database or other reference help" questions. A more in-depth report is also submitted to the university administration with the annual library report. Reference Analytics automatically generates graphs that can be easily exported into a Microsoft Word document and these figures accompany the data presentation. From an administrator's standpoint, numbers may not provide a full understanding of the day-to-day services provided in the library. Therefore the numbers are supplemented with qualitative insight (about anything from a major printing issue one month to a spike in research questions due to a specific assignment) to help present a fuller picture of library services and raise awareness of the diverse work of the library.

Penn State Hershey Harrell HSL

Implementation

Harrell HSL began using Desk Tracker to collect reference statistics in September 2010, following the Penn State University Libraries system-wide implementation. The initial customization of the standard reference form was completed by the Desk Tracker Implementation Team, a group of University Libraries staff working in collaboration with the vendor. The intention was that it would be used at more than 120 service points at campuses throughout the institution. Prior to local implementation, several additional Hershey-specific fields were requested, but otherwise data collection began using the same basic form as all other Penn State libraries. Formal training was provided for full-time Desk Tracker users at Harrell HSL, but part-time staff received less comprehensive training due to scheduling issues and staff turnover.

Desk Tracker utilizes different online entry forms for each service point and requires individualized logins. Three different forms are used at Harrell HSL, including the reference desk, circulation desk, and an office location for tracking reference services where the user has directly contacted a specific staff member or where the librarian is providing reference services outside of the library. All reference forms system-wide include

Figure 5

Desk Tracker reference form for the Harrell HSL reference desk location

the three basic fields. They are question type (e.g., reference, technical problem, directional, etc.), contact type (e.g., in-person, e-mail, social network, etc.), and an optional notes field (Figure 5). The question type field also incorporates time ranges (e.g., reference 5-15 minutes, technical problems <5 minutes, etc.).

To collect data at all Penn State University Libraries service points, the form includes some basic fields that are not used by all locations. This adds to the complexity of the form but is necessary to allow analysis of data tracked at different libraries. Desk Tracker is also used by some locations in the system to collect other types of data such as patron counts, but Harrell HSL only uses the reference forms at this time.

Customization

Desk Tracker provides the ability to easily capture information about different types of questions and methods of contact. However, adding fields to collect more qualitative information, such as the topic of the question or the resource being used, can be challenging while attempting to work within the constraints of a multi-campus data-entry platform. Harrell HSL must work through the Desk Tracker Team to make changes to the forms, and this group has numerous responsibilities they must also address to manage the system. This reduces the flexibility for an individual library to add and remove fields to reflect local changes in priorities but is important for maintaining data integrity. Customized data collection can also be accomplished using modifications to the tracking process through user training and more advanced data analysis methods. This adds complexity to the tracking process but removes the risk of changing the final format of collected data, which would impede long-term analysis.

In-depth analysis of a transaction's content (e.g., a technical question on wireless setup vs. a technical question on printing problems) relies on data entered in the notes field, which has limited searchability. Analyzing this data is problematic when inconsistent language is used to describe the question, requiring time-consuming examination of the notes to extract the relevant transactions. Since modifications to the form would require negotiations with the Desk Tracker team and would potentially compromise the integrity of data for system-wide analysis, local library staff explored methods of modifying the data entry process to achieve desired results.

A set of controlled keywords for note field data entry were established and corresponding barcodes were created to improve speed of entry and reduce typing errors (Figure 6). Keywords were chosen based on knowledge gained from previously collected Desk Tracker data and by identifying specific initiatives we wished to track more closely. The keywords are simple to update locally and new barcodes can be created using free, online 128-barcode generators or using downloadable barcode fonts with Microsoft Word or Excel. After exporting the data from Desk Tracker, analysis is conducted using features of Microsoft Access and Microsoft Excel. Transactions including a particular keyword can be separated from the complete data set for targeted analysis of the other included fields, e.g., reviewing the volume of copyright questions over time, or the preferred contact type for questions about mobile device accessible resources. A poster on developing this process was co-presented at the Pennsylvania Library Association Annual Conference (Dean & Brennan, 2011).

Figure 6
Examples of Harrell HSL keyword barcodes for data entry

Development of the barcode keyword entry and analysis system resulted in the Harrell HSL reference coordinator receiving a charge to join the system-wide Desk Tracker team in their responsibilities of maintaining and managing the system. This allows the reference coordinator to contribute her unique experiences with Desk Tracker data analysis and personally gain a greater insight into the decision-making process regarding management of Desk Tracker for the university system. Developing a better understanding of the complexity involved with management of users, service points, and other components of Desk Tracker for the system resulted in the decision to continue the use of keywords instead of requesting changes to the form.

Updates to the keywords require staff training to ensure that the changes are understood and that terms are used consistently, which is difficult when some staff work part-time and cannot easily attend training updates. At the request of another system library, the Desk Tracker team designed a paper collection sheet to allow later data entry when it is not possible to track a reference transaction as it occurs. The form is used by part-time staff at Harrell HSL. In addition to reducing the need to obtain new user access for Desk Tracker due to staff turnover in this location and simplifying training for data collection methods, it is possible to add the appropriate keywords and ensure that the correct question types are assigned to each transaction when data is later entered into the system. This addresses the training challenges while ensuring that transactions during evening and weekend shifts are captured and consistently tracked to facilitate analysis.

To summarize, the complete tracking process includes logging in to the correct form based on transaction location, selecting the appropriate question type(s) and length of time, selecting the contact type, scanning the appropriate keyword barcodes and describing the transaction in the notes field, and filling in the question duration box if the time is not adequately described by the question type fields. A time stamp associated with the form can be edited for transactions entered after they occurred, and the Hershey-specific fields are selected if relevant.

Challenges

The primary challenge when collecting data using Desk Tracker is ensuring consistent tracking. Due to the complexity of the form and the focus on analyzing qualitative data entered in the notes field, it is necessary to periodically remind staff how specific situations should be tracked. Use of different keywords and question types is often subject to interpretation, and it is impossible to ensure that all situations are entered consistently. Reminders, documentation updates, and staff training are utilized to ensure a high level of consistent tracking.

Analyzing Desk Tracker data also includes unique difficulties based on the limitations of the software's analysis features and data export options. The different fields do not consistently export into the same columns and the time categories assigned to the question types are inconsistent. It is also possible to assign multiple question types to a single transaction to capture complex interactions with users. Some of these limitations are inherent to the Desk Tracker program and some are due to the configuration of the form.

Ideally some of these challenges could be solved by redesigning the basic reference form, but this is not possible while maintaining data integrity with the rest of Penn State University Libraries. There are 24 campuses and scaling products such as Desk Tracker for our capacity of use introduces unique management challenges. The product is also primarily intended to collect quantitative data, so answering qualitative questions about reference data collected in Desk Tracker requires some ingenuity and technical skill, making analysis somewhat complex and time consuming.

Results and Analysis

One of the system-wide goals for Desk Tracker data collection at Penn State is to accurately record the volume of reference transactions by question type to report annual data to the Association of Research Libraries. This

is relatively simple to accomplish using the basic analysis features of Desk Tracker. At Harrell HSL there is also interest in using the data to identify frequently asked questions, identify areas where development of instructional materials is needed, to monitor the reference component of the library liaison program, and to identify other trends in reference service. Analysis of reference data has provided more detailed understanding of the range of questions asked at Harrell HSL, and reports have been used to successfully campaign for additional resources, target services, and track the success of library marketing initiatives. Based on these successes and the valuable knowledge gained, the author plans to continue exploring new ways to use this data to improve library services as inspired by the ACRL *Value of Academic Libraries* report (Oakleaf, 2010).

Data analysis using Desk Tracker can be complex depending on the type of reporting desired. It is possible to generate basic crosstab reports comparing different fields (such as contact type by desk location) within the Desk Tracker system. Bar and line graphs can also be generated in this manner, and text reports are available to review all fields entered (Figure 7). The options are limited and in some cases can be misleading if the user generating reports is not familiar with the system and the nature of the data collected (e.g., providing a count of total transactions instead of a sum for numerical data entered for some reporting options). Data exported from Desk Tracker can be filtered by date range, desk, user, and/or other fields depending on the specific level of analysis intended, which makes it possible to target the analysis (Figure 8). Data field management is performed in Microsoft Excel and pivot tables are often useful to summarize data into tables. Microsoft Access queries are used to select a subset of questions based on data from the notes field. Subsets can then be analyzed using pivot tables in Excel. Qualitative analysis is also possible by reviewing the full content of the notes field.
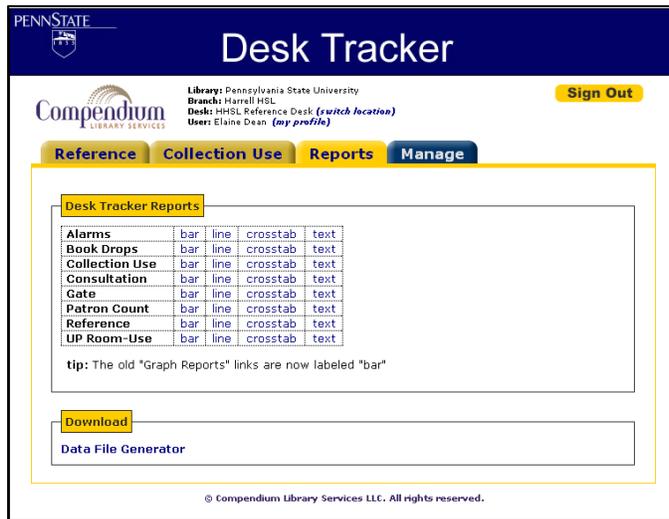

Figure 7
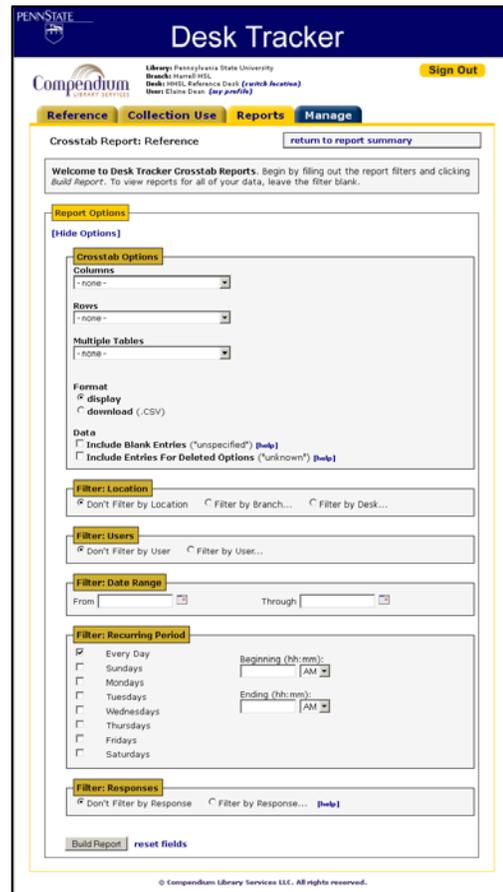*Desk Tracker reporting options screen*

Figure 8
Desk Tracker crosstab report options and filters

One of the early reports performed at Harrell HSL using Desk Tracker data was to identify the types of technical support library staff were offering. Analysis of the volume of technical questions found that of the 3,540 total transactions tracked from September 2010 to April 2011, 36% were tracked with a technical question type. The library director was able to share this report with the IT administration to successfully campaign for stronger IT support in the library. A follow-up IT report comparing IT trends before and after an IT support specialist was relocated to the library found that technical reference support provided by library staff dropped from 45% during January to September 2011 to 38% for the same period in 2012. This type of analysis is relatively simple to perform using standard Desk Tracker reporting capabilities.

Other initial reporting efforts focused more on the fields built into the form, such as question type and contact type, which provide useful overall analysis. As a greater understanding of our reference trends emerges, there is increased interest in performing more detailed analysis on smaller subsets of topical transactions to learn more about why users are asking particular questions and not others. This involves mapping reference statistics trends to marketing initiatives, resource acquisition or loss, staff changes, and other changes in library operation because simply examining reference statistics in isolation provides an incomplete picture. For example, a drop in total questions might be due to decreased user traffic or because decreased staffing has reduced the number of people available to answer questions.

Common types of reports review the volume of transactions by library staff member, service point, or different topics collected using the barcoded keywords. These reports also review patterns observed in transactions over time. Pulling out subsets of questions allows for more detailed examination, helping answer questions, such as, when during the semester did we receive the most questions about citation management software? Or, did we receive more questions about a resource after featuring it in the institution newsletter and in a display? This can be useful for tracking services that are often out of scope for library support (such as the technical expertise provided or to demonstrate interest in a service or resource) to campaign for additional funding.

Best Practices and Recommendations

Even successful systems have their challenges, and after reviewing the challenges encountered by both Neumann University Library and Harrell HSL, we identified several areas that we recommend anyone implementing an electronic reference statistics system consider. Thoughtfully considering goals and ensuring that data collection and analysis are approached strategically will improve the effectiveness of reference data assessment.

Consider Expertise in Statistical Analysis and Database Management

Collecting and analyzing data is, for some, a full-time job that requires extensive training. The same is true for database management. Statistics-gathering systems require both of these skill sets, yet librarians managing reference often have minimal training or experience in these areas. Williams admits focusing more on the setup of the form and data collection during the customization phase, rather than on data analysis. Dean needed to create a more advanced data entry process after initial attempts at data analysis revealed the system's limitations and still struggles to find the best methods for analyzing Desk Tracker data. Involving someone with a background in statistics and data analysis during the implementation and customization phases could provide helpful insight to better address the major goals for the program. This is something that search committees might consider when hiring, or skills of current employees could be sharpened through professional development.

Choose Fields Reflecting Assessment Goals

It is important to carefully consider the desired outcome for collecting reference statistics and not to simply migrate a paper collection form into an electronic format. Selecting the best field options can be challenging and final choices will depend on the individual environment of the library or system utilizing the form. Specific fields that are often tricky include time periods, question types, and individual topics of interest. For example, selecting the optimal time periods to collect should match the typical lengths you experience, but you may not have an accurate picture before beginning to collect data. Is it more important for your desired analysis to have only the common time ranges or to capture the few extremely long questions you receive? Consider the level of analysis you are interested in when deciding how specifically you break out your question types. Do you want general categories or specific question topics? It is also best to be extremely cautious if choosing to combine different categories into a single field, such as time and question type, because of the potential difficulty analyzing them separately in your final dataset.

Implement Revisions Thoughtfully to Maintain Data Integrity

The challenges discussed in each institution's sections reflect discoveries made along the way while using these systems. Library staff and the authors are aware of issues that have arisen, yet follow-through on making changes has been sporadic. Any changes made to the forms or collection process could potentially make the "new" data incompatible with the "old" data and influence the ability to analyze trends over time. These changes would be best made during a semester break or time when the break between data sets would not adversely affect analysis. Spending time carefully thinking about how and why the system should be configured during implementation may reduce the need for later changes. It is important to carefully consider the impact on long-range analysis and trends over time when making updates to data fields.

Record Library Events and Changes to Inform Assessment

Reference statistics are only one piece of the broader picture of library trends. Analysis and reporting are most useful when informed by the major changes and events that occur during a reporting period. Keeping a record of these changes, such as new staff start dates, marketing initiatives, publicizing a new resource, service or coverage changes, and the date or period when they occurred will make it easier to identify their potential impact on reference trends. Creating a record is also a way to prevent loss of institutional knowledge due to staff turnover, which could impede future analysis. Make sure to focus on those changes that have the potential to impact strategically important areas instead of attempting to record everything.

Assessment is a Long Term Investment

Some questions require analysis of data collected over longer periods of time to be answered well (e.g., what are our busiest times of semester?). This is especially true in the early stages of use when tracking may be inconsistent and users may not be reliably entering all transactions. Librarians have to decide on their comfort level with making institutional decisions based on limited data (e.g., changing summer hours based on one year of data). Depending on the importance of the decision or change being made, consider consulting a statistician for input about how much data is needed to make informed decisions.

Consistent Data Depends on Effective Staff Training

Consistent and thorough staff training is vital to any system's success as inconsistencies and inaccuracies are inevitable. Provide both in-person and asynchronous training and be sure that the information in each is identical to help minimize data entry issues. Training documentation, whether in print or online, should be readily available to

library staff at the locations where questions occur. Make sure language is commonly understood and that staff are clear on the definitions of all options they need to track. Informal training, such as e-mail reminders or one-on-one conversation is also a good way to encourage and maintain staff participation. Communication with staff is vital and conveying the benefits of tracking and analysis helps demonstrate why this is an important use of time when other activities compete for their attention. Both institutions have successful reference statistics programs due to a combination of effective form design and a participatory staff.

Communicate with IT

It is also worth determining the best way to address user identification and password setup needs when implementing a reference statistics system. Consulting your information technology department or a colleague at your institution with experience implementing systems requiring individual logins during implementation can help identify potential pitfalls and solutions. Different institutions have different IT security requirements regarding user identification. The Penn State University Libraries Desk Tracker Team discovered they could not use the existing institution username and password system or shared generic logins and needed to develop their own system to comply with security requirements (Babcock et al., 2012). Reference Analytics was implemented with minimal input from Neumann University's IT department and the choice to have paraprofessionals use a generic login was made out of convenience rather than any security considerations.

Designate a Program Coordinator

Finally, to ensure system success, having a program coordinator who is responsible for system management, ensuring staff compliance with tracking procedures, providing ongoing staff training, performing data analysis, and communicating issues with the vendor, is vital. Depending on the size of the institution and staff expertise, this might be a single individual or a team with shared responsibilities. Either way, leadership and communication with library staff is necessary to ensure that data collection continues smoothly with full staff participation. Both authors of this article are responsible for coordinating the systems at their institutions and have worked with implementation, training, and analysis.

Conclusion

The significant time investment required for implementing and managing an electronic reference statistics data-gathering system is balanced by the increased amount of insight into service trends. Providing this valuable information for library stakeholders helps demonstrate the value and usage of library services, as well as informing library staff decision-making efforts. This article offers a comparative look at experiences with two specific programs, but critical thought and a significant time investment are necessary regardless of the system chosen. When planning to implement an electronic system, carefully consider your institution's needs, which kinds of data are important to collect and share, and how this data can most accurately be gathered. The time spent creating an efficient system that caters to the unique needs of the institution will contribute strongly to the successful collection and analysis of data and its translation into meaningful information to inform library services.

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