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Anjana Bhatt

Florida Gulf Coast University, abhatter@fgcu.edu

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Assessing E-Collections When Every E-Resource Has its Reader, Every Reader has His/Her E-Resource, and E-Resources are Ever Growing

by **Anjana Bhatt** (Electronic Resources Librarian, Florida Gulf Coast University) <abhatter@fgcu.edu>

Electronic resources, or e-resources, whether born digital or converted, are enticing students and librarians alike and have quickly become the format of choice. Libraries subscribe to e-collections ranging from databases to online journals to eBooks, and deal with multiple eBooks/e-journal publishers. It is not unusual for e-resources librarians to work with hundreds of databases that contain thousands of e-journals and to manage the nerve-wracking assignment of keeping track of e-collections usage.

Assessment Challenges

E-resources librarians struggle with issues such as content overlap, the need to support multiple formats (some e-journals are only available to those who also subscribe to the print version), constant changes in holdings, lack of perpetual access to electronic information, managing e-journal portals, registering with numerous publishers for online information, negotiating individual licensing agreements, keeping abreast of the growth in e-resource management tools, and last but not least, assessing e-collections on a continuous basis.

At **Florida Gulf Coast University (FGCU) Library**, we currently provide remote access to 97,000 online journals, of which 46,000 are unique titles. We obtain eBooks through **NetLibrary**, **Gale Virtual Reference Books**, **Oxford Online**, and **Greenwood Press**, and we are in the process of adding **My I-Library**. In addition, we subscribe to a networked CD-ROM financial software package called *Research Insight* (formerly known as **CompustatPC Plus**) for the business faculty and the students in the accounting and financial programs.

As an e-resources librarian, I have faced some thought provoking challenges in assessing our e-collections. The philosophically nagging question is "what are we measuring, what is being used, who is using the content, how the databases are being used and can the usage data be a good measure of effectiveness of the databases?" (**Luther**) Does the e-resource that we are assessing cover the same content/subject matter/chronology as its print counterpart? Unless there is similarity in content, how do we decide the value of one over another? How does one select a particular e-collection when there is considerable overlap among aggregators? Are there good reasons to purchase an e-product even if it is only 50 percent unique?

For consortially-held databases, usage statistics alone cannot drive individual purchasing decisions. What if some libraries are required to participate so the consortium gets a better deal? Even though the database may not be used heavily at your library, consortium membership requires individuals to choose the good of the whole. Canceling a database that is used less often at your institution will jeopardize the

price for all the other institutions. Libraries face a strong need to demonstrate the so-called **Return-on-Investment (ROI)** by maximizing the number of resources while containing costs. How do we determine the **ROI** for consortial purchases?

E-journal packages pose another set of difficult issues. These packages are created based on the purchasing agreements that a vendor can make with publishers. Are all the journals in the package valuable, or are some just filler? Is it worth spending the money for the valuable journals and just ignore the "thrown ins?" Usage data for these packages is problematic as well. In the absence of statistical data broken down by title, how effective are collection-level usage statistics? If title-level data is available, what does the contract permit? Can you drop journals based on usage data? Unless the journal aggregator allows libraries to add/cancel journals in the package every year, usage data is not very useful. Furthermore, statistics do not usually distinguish among printing, downloading, or emailing, but if they did, should we give greater importance to any one type of use, or user? For example, it is tempting to cancel an expensive research title that is used by just a few faculty members in favor of high-use popular journals (**Luther**), but that expensive title may be critically important to your faculty. Quantitative data out of context is not useful for answering these questions.

We can all identify with similar difficult, non-usage driven decisions, such as when we are required to spend a large amount on one database because it is critical to one program. Print collections in academic libraries are not generally weeded based on usage; should an e-resource be treated differently? Every e-resource like every book might have a user. If usage is low, it may mean that we need to enhance user awareness and increase bibliographic instruction activities. Low usage may also be an indication of a poor user interface, information which should be relayed to the vendor in hopes of improving resource usability.

E-resources are ever growing and there is a constant change in the content as publishers lose or add licenses. Usage statistics are affected due to mergers. The e-product market is changing more quickly than our standards, and there is a possibility that **ICOLC** guidelines and **COUNTER Code of Practice** may be obsolete for databases that are being developed with new technologies. (**Shim & McClure**).

Role of Usage Statistics Data

In a study conducted by **Shim and McClure** (2000), it was found that, in general, libraries are not prepared to commit the necessary resources, staff time, training and effort into data gathering and evaluation. Some studies indi-

cate that librarians are reluctant to employ vendor-supplied usage statistics in assessing and making collection decisions, but other studies conducted at a later date confirm that such vendor-supplied statistics are considered valuable and are, in fact, very much in demand by librarians (**McDowell & Gorman**).

Interestingly, this study reveals that there is less consensus among vendors as to the key types of usage statistics than there is among librarians. Even though librarians and vendors share a significant number of concerns regarding usage statistics, a study (**Luther**) revealed that vendors use usage statistics as a marketing tool and prefer to collect data only on those factors that can be used to promote the purchase of their products. **McDowell and Gorman's** study found that there is no significant relationship between the type of usage statistics provided by the vendors and those desired by academic librarians.

As we all know, funding has increasingly been tied to performance measures (**Goldberg**). As libraries divert more money every year towards e-resources, the need to find (in itself difficult) and to interpret this data to assess e-collections in meaningful ways has become more pressing. Where e-resources are concerned, there is a perception that we must have usage statistics to secure and allocate funding, to select and de-select e-collections, to provide **ROI** justifications to university officials, to understand user behavior patterns and, in some cases, to persuade individual departments to pay part of the subscription cost.

Problems of Using Usage Data for Assessing E-Collections

To state that usage statistics data, at this juncture, is a problematic tool for assessing and comparing e-collections is not an exaggeration (**Shim & McClure**). Literature review reveals that there are a number of problems associated with operationalizing usage data for assessment purposes. There is no common data set used across all types of e-collections (e-journals/e-databases/eBooks/CD-ROM-based networked products). Data is delivered in inconsistent formats (html, excel or email) and may count few but not all pertinent factors, such as number of total sessions, total hits but no details on individual journal/database usage, full-text access, most visited pages, search sessions, access to articles by journal title/topic/categories, page views, and download requests by formats etc. Vendors use different terminology and may de-

continued on page 26

fine "usage" in such various ways as accessing the homepage of the e-resource, downloading a full text article, or simply accessing table of contents/abstract/or full text (McDowell & Gorman). Keeping in line with protecting user's privacy they also avoid collecting data on user behavior. Most vendors provide information on number of sessions or searches but in reality a user might have logged in repeatedly to do the same search for a variety of reasons (system failure, interrupted work session, too many simultaneous users), so this information is of dubious utility.

Time period of usage statistics is another concern. Some vendors (e.g., StatUSA) do not keep statistics for more than six months on their Website and do not even bother to provide the previous data on demand. Most vendors provide the ability to choose a time period for data retrieval, but in some cases it is not possible to choose a specific time period or to pull up data for more than one year in a single report in order to analyze the changing usage patterns. One has to be content with whatever time periods are available. There are different standards for the time limit and the number of clicks that vendors count may result in the counting of one usage as multiple usages. It takes considerable time to check individual e-resource's Website and collect this information for presenting it in a suitable format for ensuring a proper analysis. Merging this data together for a realistic analysis in the absence of qualified staff is another problem that many libraries face. Most libraries prefer to access the raw data available on the vendor's Websites but hesitate to compile it for comparison purposes as they are not sure about what would best suit the institutional needs. Even though standardization is a critical factor, vendors have to realize individual needs of libraries and must provide abilities to customize the data (McDowell & Gorman).

How realistic is it, then, to assess e-collections with the help of — unfortunately ever so inadequate and difficult to measure — usage statistics data? During my tenure of just one and half years as an e-resources librarian, I have come across three incidents of vendors reporting inaccuracy of their usage data. When libraries have no control in collecting data and can not identify consistent under, or, over counts (Luther, Shim & McClure) how wise is it to trust the validity of the usage statistics for making informed decisions? Until usage statistics produce meaningful data that can be interpreted in some sensible ways, libraries can not depend solely on this information to make collection assessment decisions.

The broader question, however, is this: how much do usage statistics really matter when every reader has his/her resources and every e-resource has its user? At best, the usage statistics for any given e-resource tell nothing more than how many articles were downloaded or how many search sessions were initiated. Did the user find what he or she was looking for? Do hit counts reflect on the quality of the articles? And for growing universities, is it real-

against the grain people profile

Anjana H. Bhatt

Electronic Resources Librarian
Phone: (239-590-7634)
<abh@fgcu.edu>

BORN & LIVED: Born in New Delhi, capital city of India. I lived in India until 1995 and then moved to Syracuse, NY, United States. Since 1997 Fort Myers, Florida has been my home.

EARLY LIFE: When I was young I lived in very small towns that were close to uranium mines in forest because my father worked at the Department of Atomic Energy of the Indian government. I grew up with nature and with poor, and yet, down to earth natives. Moving every three years with my parents through a number of cities, towns and villages aroused my interest in geography and far about places on this earth. It also gave me wonderful opportunity to learn languages from people belonging to different culture and fall in never ending love with nature. I learned to adjust with any thing that came my way and move on.

FAMILY: I have three siblings: 2 sisters and 1 brother, and am married to an Engineer husband from a completely different community than mine. I have a 22 years old son who will graduate in Spring 2007 with Theatre major degree from the University of Central Florida.

EDUCATION: MS in Information Science, MLIS and MA in English Literature. Eligibility of Lectureship in Library & Information Science from the University Grants Commission of India.

MOST MEANINGFUL CAREER ACHIEVEMENT: Moving over to US for higher education, serving at FGCU; first as the Business Librarian and now in my dream position of E-resources Librarian.

PROFESSIONAL ACTIVITIES: Member of ALA, ACRL and Asian African and Middle Eastern Section (AAMES) of ACRL. I present regularly at these conferences.

IN MY SPARE TIME I LIKE TO: Read: (fiction and philosophical books), sing, do things strictly for just MYSELF, watch movies, make pencil sketches, write poems and at times just sleep continuously. I love gardening but have not done any.

FIRST JOB: Humble beginning of Library Assistant at the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Hyderabad Branch, India. Assigned to manage the publisher's catalog library.

FAVORITE BOOKS: *Wherever You Go, There You Are: Mindfulness Meditation In Everyday Life* by Jon Kabat-Zinn. *The Beggar King and the Secret of Happiness: A True Story* by Joel ben Izzy.

PET PEEVES: War and war mongrels. I hurt with every human being who gets hurt because of the act of terrorism and war. I dislike any act, be it at physical or psychological level that renders humans helpless and fearful. These acts destroy human potential and snatch away their right to lead a peaceful life.

PHILOSOPHY: You will become as small as your controlling desires or as great as your dominant aspiration. If we believe we can do something, then we can acquire the ability to do it even if we did not have it in the beginning. Everything we need for a happy life is within our self. We need to remember that life is a compromise of what our ego wants to do, what experience tells us to do, and what our nerves let us do.

WHERE DO I SEE THE INDUSTRY IN THE NEXT FIVE YEARS: Generation of techno savvy students and emerging Web based technologies will shape next five years of information industry and university libraries. I see possibilities of increased free access to authoritative information.

CAREER GOAL I'D LIKE TO ACHIEVE IN THE NEXT FIVE YEARS: Head the Electronic and Digital Services department of a learning center.

istic to stop subscribing to costly, possibly lesser-used databases that might be required for program accreditation purposes, for important faculty research, or which are critically important

to one or two programs? For example, at FGCU, we pay \$20,000 for *Research Insight* software because this e-resource has its users

continued on page 28

and there are some users who will not be effective if we stopped subscribing. We, however, have collected usage data through the Fall and Spring semesters in 1998-99 and persuaded the College of Business to allot \$5000 towards the subscription.

Usage Statistics, ScholarlyStats and COUNTER Code of Practice

Librarians, vendors and publishers all have realized the value of usage data for their own specific purposes and there have been a number of initiatives in this direction. The most promising is the **Counting Online Usage of Networked Electronic Resources (COUNTER) Code of Practice**. It is a developing international standard that is jointly owned by publishers, intermediaries, libraries, consortia and industry organizations. Designed for all of its participants and with an objective to develop a standard code of practice for measuring usage of online information products, **COUNTER** is credible and compatible. Comparison of usage data is the key element for assessing e-collections and **COUNTER** fulfils this need by providing a consistent framework for recording and exchange of online usage data. Along with the standardized definitions of data elements, it also includes standards for data elements to be measured, content and format of usage reports, requirements for data processing and auditing, and guidelines to avoid duplicate counting.

It is encouraging to note that in addition to a revision of first code for journals/databases (including detailed specifications for consortium-level reporting), Release 1 of the **COUNTER Code of Practice** for books and reference works was issued in March 2006. This first version brings the possibility of ensuring comprehensive industry standards for the recording and reporting of usage statistics for eBooks. It includes a set of six basic usage reports that cover full-text requests for a whole title, as well as for sections within a title such as chapter, page, and paragraph. Searches, sessions and turn-aways are covered as well. As usual it also includes the glossary of terms relevant to books and reference works. Interestingly, the format of the report is almost consistent with the existing codes for journals and databases, as the specifications for report delivery, data processing, audit and compliance are identical. The only exception is that the content of the usage reports has been changed and the set of definitions of terms has been expanded. Participants can access usage data from a password-controlled Website. Users can request email alerts on updated reports, which are available in various formats (CSV, Excel and XML) and provided on a monthly basis. New reports are available within four weeks of the end of the reporting period.

Most importantly, the data from the previous year is also available, which is critical for comparison purposes. At this time, however, it is not possible to pull data for more than one year into a single report to analyze usage pat-

terns. Another drawback is that currently very few vendors are **COUNTER** compliant (**Luther, Shim & McClure**) and libraries that may want to use **COUNTER** reports are forced to deal with two sets of statistics. Some vendors, in spite of being **COUNTER** compliant, do not provide the ability to extract reports on their Websites and require you to sign up for receiving these reports on a monthly basis. Unfortunately, **COUNTER Code of Practice** does not prescribe a delivery method as well.

To alleviate some of the problems associated with collecting usage statistics, libraries can now look forward to using a new tool: **ScholarlyStats**. Launched in January 2006, and marketed by **MPS Technologies**, **ScholarlyStats** is designed to manage and evaluate usage statistics from multiple sources (**Alliances & Deals**). Currently, **ScholarlyStats** covers 39 vendors and promises to deliver monthly, ready-to-analyze consolidated journal and database usage reports in standardized **COUNTER**-compliant format. Usually librarians need to go to a particular Website and extract (pull) statistics; potentially, the best part of subscribing to **ScholarlyStats** is that statistics are pushed to the client in a neat, unified package. Recently three major US consortia (**Michigan Library Consortium (MLC)**, **PALINET** and the **Carolina Consortium**) have purchased **ScholarlyStats**. **ScholarlyStats** reports can also be used by publishers to analyze usage patterns, improve user interface/navigation problems, and rectify such access issues as logout time and access cut-off.

Pricing for **ScholarlyStats**, however, is a matter of concern. Their current cost structure is based on the number of platforms (vendors) from which they collect reports for a library. Presently, the pricing for 9,24, and 25-39 vendors is at \$3,995, \$9,720 and \$14,270 respectively. Faced with constant funding crunches, how many libraries can afford to spend this amount for collecting usage statistics? It would be interesting to conduct a study that could calculate the staff time in terms of money and compare this cost against the cost of subscribing to **ScholarlyStats**. All said and done, though, **ScholarlyStats** and **COUNTER** standards are a glimmer of hope for the near future.

Practical Solutions

As stated earlier, it is currently impossible to compare usage statistics data across a number of e-collections; however, I have found that this data can be used to a certain extent for assessing e-collections. Currently, I manually collect annual statistics for about 55 databases, out of which only **ProQuest** and **EBSCO** databases are **COUNTER** compliant. For our consortium databases, I depend on the usage data that is broken down by institution and is gathered by our consortium administrator. Since "Sessions run" and "Searches run" are the most commonly available statistics, I track our databases on these two factors and our technical services head has plans to run this data against "cost per usage" price to determine **ROI** and also to identify "low-usage," high "cost per usage" databases. When collection librarians evaluate new databases or make renewal decisions, I use the overlap analysis tool available

through the client center of the **Serials Solutions** product to provide unique content information and title lists for informed decision-making. Usage data can perhaps be an indicator of databases with poor search interfaces as well. In the future we would like to collect data on the highest number of hits for journals that provides only abstracts and no full-text articles so we can subscribe to these titles online.

We do recognize that e-resources are ever growing and have tremendous effect on customer services and collection process in academic libraries. We are making conscious efforts to replace paper with e-content and assess e-collections while keeping in mind that every user has his/her e-resource and every e-resource may have its user. At this time, we fervently hope that more and more e-vendors would opt to be **COUNTER** compliant and provide standardized usage statistics data for realistic assessment of e-resources.

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continued on page 10

Digital Library of Earth Systems Education: Collections Assessment

by **Barbara DeFelice** (Director, Digital Resources Program, Dartmouth College Library) <Barbara.DeFelice@dartmouth.edu>

and **Constance Rinaldo** (Librarian of the Ernst Mayr Library, Museum of Comparative Zoology, Harvard University) <crinaldo@oeb.harvard.edu>

BACKGROUND

The **Digital Library for Earth System Education (DLESE)** is a multi-faceted digital library that includes a searchable collection of metadata records for educational resources. Our work in **DLESE** focused on the Educational Resources Collection component of this digital library. When we refer to the **DLESE** collection in this paper, we mean this **Educational Resources Collection**. **DLESE** was open to public use in 2000 and continues today; our project examined data from spring of 2002 through December 2004. Aspects of the metadata, search system and collections workflows and policies have changed over time, so we will use current terminology in this paper, although some of the processes we describe have been modified since this project ended.

The collection was developed for teachers and learners interested in all aspects of the earth system. Records describe objects at different levels of granularity, such as a whole course, a syllabus, an image, a collection of images, a data set, a tutorial or an applet that illustrates a scientific concept (**Kastens et al., 2005**). When the **DLESE** search page is opened (<http://www.dlese.org>), a user can choose to search on a word or phrase or to use non-subject qualifiers (such as Grade Level and Resource Type). A user can also browse by subject or collection, and can limit subject term searches by Grade Level, Resource Type, Educational Standard and Collection.

DLESE describes its collection along the dimensions of Subject (originally called Topic), Grade Level (originally called Learning Context), and Resource Type (originally called

Learning Resource Type), among other metadata elements (**DeFelice, Kastens, Rinaldo, & Weatherley, 2006; Rinaldo & DeFelice, 2005**). Metadata assigned to a resource must include one or more grade levels, resource types, and controlled vocabulary topic terms, which can be used to browse or to limit a free text subject search. Therefore, these attributes were used in our collection assessment project.

Collection assessment is the process of systematically comparing the scope and balance of a library's actual collection with the scope and balance of materials desired by the library users (**Hall, 1985; Nisonger, 1992; Richards & Eakin, 1997**). Materials desired by the users, staff, funding entities, and/or overseers of the library are described in the collection policy. Materials desired are also expressed in the actions of users, by the types of materials requested by the community, from direct user feedback, and through searches for materials. In the case of **DLESE**, information about users' desires comes from analysis of requests to the Search and Browse functions of the **DLESE Discovery System**.

Collection assessment becomes more critical when a collection is being built for an unknown audience. **DLESE** users are not required to register to search the Educational Resources component of **DLESE**, so there are no records of exactly who uses **DLESE**, how much, and how satisfied they are with the collections. Without a central collection development operation, there is no guarantee that the collection will be balanced in terms of depth and breadth. We did not assess individual resources in a collection, nor the effectiveness of individual items in improving science education. Our assessment was designed to try to identify gaps in the collection so that the intended audience could be served. Since the intended audience was "anyone interested in learning more about the Earth," the collection needed to satisfy any age level, people with different educational backgrounds, teachers and students in formal and informal learning environments, and people from a wide range of geographic areas (**Manduca & Mogk, 2000**). The collections assessment was intended to help guide **DLESE** collection developers by providing general directions for proactively building a useful collection for this broad audience.

DLESE was planned from the start to have a volunteer, contributor-based collection development program to support a broad scope statement and a diverse potential user group. The collection needed to be balanced, broad and of high quality for this very diverse, and to a large

degree unknown, user group. Therefore, some means of monitoring the collection in order to guide the collection building efforts was needed. Otherwise, the collection might reflect only the interests of the early adopters/contributors, and fail to meet the needs of many new users. We wanted people to find something useful in the **DLESE** collection so they would be motivated to return.

When a library user finds no resource(s) that match a query, the user experiences a negative interaction with the library. Many factors contribute to this interaction, including user confusion about the search system, metadata or other kinds of indexing that does not match the user's inquiry, or lack of content that meets the need expressed in the search. We wanted to see if we could isolate the areas where a lack of content was the key issue.

METHODS

Data Acquisition

Working with the staff at the **DLESE Program Center (DPC)**, we identified the kinds of data and the formats for this data which we thought would be most useful at the beginning of the project. There are many different kinds of data to use, so it took a considerable amount of time to isolate the data that would give us the insights we wanted and to decide what filters to apply to the data. Working closely with the technical staff at the **DLESE Project Center**, we continuously checked the data for consistency and quality over time.

Digital libraries change constantly, and since the project started, some changes in topic terms took place, and other useful metadata was added, such as Educational Standards. However, we continued to focus on the key parameters for assessment that we picked in the beginning of the project, Subject, Resource Type and Grade Level. Search and browse logs show what users are looking for (user behavior), and searches that have no results (null searches) help identify potential collection gaps and perhaps provide information about where the search engine and user behavior do not match (**Gagnon & Makuch, 2003**). We mapped free text searches to the Subject metadata provided by **DLESE**. We reviewed and characterized zero-result (null) searches to determine if we could identify gaps in the collection to aid collection builders in developing balanced collections. We analyzed search logs to identify reasons for zero result (null) searches. The search engine was revised over time and these revisions changed responses for some of the observed user queries during the course of our study. As more resources were added search responses also changed.

continued on page 32

Accessing E-Collections ... from page 28

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