
Research and Practice in Academic Libraries: A Case Study

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In recent decades, as academic librarians have achieved tenure-track or even special faculty status, a growing professional consensus has emerged that they should uphold this status by actively engaging in research and publication. Beginning in 1971, with the enactment of ACRL's faculty status standards for research librarians, scholarship has been officially recognized as an important duty for academic librarians. The 1992 revised version of the standards confirmed this view by stating that "librarians add to the sum of knowledge through their research into the information process and other areas of study."¹ ACRL continues to emphasize the importance of this issue to the present day. In its most recent Statement on Professional Development, approved on July 8, 2000, ACRL expresses the opinion that:

Academic and research librarians have a responsibility to share what they have learned through writing, speaking, mentoring and modeling, in order to facilitate the learning of their colleagues and the advancement of the profession.²

In addition to the official position of organizations such as ACRL, a growing body of literature discusses the direct and indirect benefit to librarians of research and writing. In an article in the September 1986 issue of *College & Re-*

search Libraries, Dale S. Montanelli and Patricia F. Stenstrom refer to three benefits that librarians derive from engaging in scholarship. The first of these is that research promotes advancement. As they put it, "study after study indicates that successful librarians, as measured by professional advancement, publish more than their less successful counterparts." The second benefit cited by Montanelli and Stenstrom is that research "provides recognition when advancement is not possible." Research provides both an alternative means of gaining recognition, and a way for librarians to exercise autonomy and creativity, pursue challenge, and engage in professional learning. Finally, research enables librarians to develop the skills and analytical abilities necessary to cope in an environment of constant change.³

Yet, in spite of these potential benefits, many academic librarians continue to regard research as a necessary evil at best. For a large number of librarians, the prospect of engaging in research is daunting. It requires a major commitment of time, effort, and thought, one that many librarians are reluctant to make. Possibly the biggest obstacle to persuading academic librarians of the importance of pursuing research is the way in which they perceive research relative to their other duties. It is regarded as a burden of time and effort, a

distraction from their normal duty of serving their users, a distasteful necessity imposed by the demands of tenure. Yet research can be much more than a way to satisfy tenure requirements or an esoteric pursuit apart from professional practice. It can also be an excellent way to gain understanding of issues and problems that confront us on a daily basis and to further our growth and development as librarians.

For academic librarians, research should be regarded not as something separate from our normal public or technical service tasks, but rather as an integral part of those duties. In the words of William K. Black and Joan M. Leysen, "there should be a real continuity between professional practice, research, and service, and we need to appreciate the benefits inherent in this relationship."⁴ Through engaging in the research process and accompanying literature search, academic librarians can gain a deeper understanding of an issue or

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problem related to their work routines. As Black and Leysen put it, "scholarly projects should come ... from the daily work of the librarian who is involved in planning and developing services and programs and in making decisions related to them."⁵ For example, a reference librarian doing a research study on the reference interview can use that research as a means to improve his or her ability to work with patrons at the reference desk. By having this research published as a journal article or in some other format, he or she then allows other librarians to benefit from it. As Rebecca Watson-Boone describes it, this is the model of the academic librarian as "practitioner-researcher," who is able not only to use research as a means of improving professional practice, but also to incorporate research methods into their daily work habits and problem-solving skills.⁶

Currently, the authors, who work at Joyner Library, East Carolina University, are engaged in a research project analyzing free scholarly electronic journals. We feel that this project provides a case study as to how academic librarians can integrate research into their overall professional duties, and in particular use research as a tool for gaining insights into issues of major importance for the library profession. This study arose directly from a project to create a searchable database of all e-journals available to Joyner Library's user community. As part of this project, we compiled a list of free e-journals and e-zines. During this fairly straightforward collection evaluation and development task, a number of interesting issues regarding these e-journals became apparent, issues of direct relevance to academic libraries. This realization proved the starting point for our research. By collecting a much larger sample of free scholarly e-journals and doing a detailed analysis of them, addressing questions such as who publishes these journals, what subject areas are most represented, and how many are still being actively updated, we hope to gain some understanding of the viability and duration of these journals. In particular, we wish to see if free e-journals are indeed emerging as a legitimate, alternative form of scholarly communication. Once our research is completed, therefore, we will both have collected additional free e-journals that we can make accessible to our users, and have a more thorough understanding of the above issues. Having arisen from our professional practice, this research project will hopefully enable us to improve that practice. In this way, research

and professional practice are not opposites, but rather mutually reinforcing elements of a single process.

Origins of the Project

Like most academic libraries, Joyner Library has been deeply impacted by the exponential growth of electronic journals. Currently, Joyner Library provides full text, electronic access to well over 8,000 magazines, journals, and newspapers. Providing access to these titles has been a problem, as until now there has been no single place where a user can search to see if we have full text, electronic access to a particular journal, and if so, where it can be found. Therefore, in June 2000, the authors were among a project team that began work on an E-Journal Locator <<http://www.lib.ecu.edu/locator/>>, which would provide users with "one stop shopping" in terms of finding e-journals available through Joyner Library.

For this project, it was decided to include those publications that provide free, full-text access to most or all of their content, going back at least one year. For example, a user looking for *Time* in the E-Journal Locator would find links both to full text aggregators such as ProQuest that include *Time*, and to *time.com*, which has complete full text coverage of the magazine from January 1994 to the present, except for the current issue. We decided to include free electronic journals in this project for several reasons. For publications such as *Time*, available both for free and through subscription databases, linking to the free Web site gives users an alternate means of access. This is especially important for those users having problems with remote authentication through our proxy server. This is the only way to make our users aware of free electronic journals, unavailable through any other means, and provide them with access.

In June, one of the authors began compiling a list of electronic magazines and journals meeting these criteria. He collected seventy-six titles, which were then added to our overall e-journal database. Of these seventy-six electronic publications, fifty could be classified as scholarly e-journals. We defined free scholarly e-journals as "English language scholarly journals that make most or all of their content freely available via the World Wide Web, without requiring registration or imposing other barriers to access." These items varied greatly in terms of currency, publication schedule, formatting of articles (HTML or PDF), frequency of publication, and other fac-

tors. Thus, even a seemingly routine, mundane, task was able to spark some interesting research questions.

Background Issues

Simply analyzing a relatively small sample of scholarly e-journals raised a number of interesting issues, and the authors felt that attempting a more thorough study of these publications promised to yield some useful insights. Among the issues raised were the nature of publishing in the Web environment, the stability of that environment, the economic viability of free e-journals, the publisher, the potential for using links and multimedia content, and finally, the question of whether free e-journals can provide an alternative to the current commercially-driven scholarly publishing system.

Most of the e-journals we found, even newer electronic-only ones, conform to the traditional model of the scholarly journal. That is to say, collections of articles were published periodically as separate issues and/or volumes. There were several, however, that published articles as they came in, and did not organize their articles into issues or volumes. Even among those journals that did use the traditional model, many published new issues on an infrequent basis. This raised the question of whether, in an electronic environment, the traditional model of journal publishing is still necessary.

Closely related to this issue is that of new versus preexisting journals. Many of the e-journals we found are new, Web-only publications, such as the *Journal of Mundane Behavior*.⁷ Others, however, like the *British Medical Journal*, are both published in print and made available for free via the Web.⁸ Finally, a third category of journals, those that have migrated from print to free electronic-only access, was also discovered. *Essays in History*, from the University of Virginia's History Department, is an example of such a "migratory" journal.⁹

Another issue that arose while gathering free e-journals for the locator database is the question of the differences between Web-based and print content. As we all know, one of the great advantages of Web pages is that they are active documents that can be easily altered when necessary. Unfortunately, this can also be a disadvantage in terms of the consistency and reliability of the information offered. Some of the e-journals we found attempted to address this problem by presenting articles in Portable Document Format (PDF). In addi-

tion, Web-based publishing allows the use of a variety of audio, visual, and other interactive and multimedia content not available to print journals. Most of the journals we found included only text articles. Some, however, did offer links to related resources, and several even featured multimedia content. This raised the issue of how widespread the use of non-text content is among free e-journals.

The issue of archiving Web-only publications is also a concern. What if the e-journal should cease publication and stop maintaining its Web site? *History Reviews Online* is an example of a free e-journal that literally disappeared from the Web overnight. A related issue is whether free e-journals can be economically viable. As will be discussed below, these are questions we sought to pursue in our literature search on this topic.

Another interesting question that arose is who is producing free scholarly e-journals. Not surprisingly, scholarly societies or academic institutions created almost all of the ones we found. Only two or three were maintained by commercial publishers or other for-profit organizations.

The issue of the authorship of free e-journals led us to arguably the most important issue that arose during this process: the current crisis in scholarly communication and the possible role of free e-journals in helping provide a solution. Scholarly communication refers to the process by which researchers and scholars share ideas and research findings with each other. The traditional scholarly journal has been the primary vehicle for communicating such information in many academic fields, and is therefore an integral part of academic and research library collections. In the last several decades, however, two major developments have brought this system into crisis.

The first of these developments is the rapid growth in the number of scholarly journals. Since the mid-1980s, the number of journals published worldwide has approximately doubled. A major part of this proliferation of academic journals has been the entry of commercial publishers such as Elsevier into the realm of scholarly publishing, often creating "niche" and "rapid communica-

tions" journals, especially in the sciences, with high impact factors and, not surprisingly, high prices. Ironically enough, the goal of the rapid communications titles is to make research findings more readily available to researchers

worldwide. The financial burden of maintaining these subscriptions, however, weighs heavily on academic libraries, as these publishers have found scholarly communication to be extremely profitable, earning profit margins of up to 40%.¹⁰

This situation has led to the second major element of the scholarly

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communication crisis: the dramatic increase in serials subscription costs. During the period 1986-1999, serial costs increased by an annual average of 9%, well beyond the rate of inflation. This has resulted in a situation where ARL libraries are spending 2.7 times more on serials than in 1985-86, while actually subscribing to 6% fewer titles. Thus the cruel paradox at the heart of the serials crisis: while more journals are available than ever before, libraries are subscribing to fewer and fewer.¹¹

Unfortunately, the hope of many that electronic journals would provide a solution to the scholarly communication crisis has proven to be forlorn. Academic libraries are spending just as much money, if not more, maintaining subscriptions to both print and electronic journals. In most cases, electronic access to a fee-based title is contingent upon maintaining the print subscription; predominantly among the sciences, obtaining electronic-only access is, in fact, more expensive than maintaining the print subscription alone. Finally, acquiring access to full text article aggregators such as ProQuest or EBSCOhost has merely added to the budgetary burden. In short, the crisis in scholarly communication has stretched academic library acquisition budgets to

the breaking point.

This has definitely been the case at Joyner Library. New print journal subscriptions have been frozen for several years now, with departments forced to exchange current titles for new ones on a one-to-one dollar basis. As with many other libraries, Joyner is beginning to examine critically its serials and electronic resources budget while simultaneously engaging in serious evaluation of print journal holdings and electronic databases using various quantitative methodologies. At Joyner, as at most academic libraries, the fiscal effects of the scholarly communication crisis are felt on an almost daily basis.

As we gathered free e-journals for our locator project, the issue of such journals providing an alternate form of scholarly communication, free from the control of commercial giants such as Elsevier, arose almost immediately. Several free scholarly e-journals, such as the *Electronic Journal of Sociology*, have as their explicit objective taking back control of the scholarly communication process from the commercial publishing houses.¹² By analyzing a larger sample of free e-journals to see how many have been actively maintained, and how many

new ones have been started, we can hope to determine whether these publications are indeed emerging as a possible alternative means of disseminating scholarly research, or if they are merely a brief experiment destined for failure.

In light of the issues discussed above, free e-journals were clearly a research topic worthy of further exploration. We decided, therefore, not only to continue collecting additional journals, but to expand the process from a practical, collection development project to one also incorporating a research component. Thus, we were able to successfully integrate research with practice. The next step was to decide on our research methodology and begin the actual research process.

Methodology

Our first task was to define the phrase "free e-journal." At the University of Houston's Web site, we found a very detailed set of selection criteria that described our phrase.¹⁴ We further refined our definition after examining the Sociocite/ICAAAP Journals Database and

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Distribution Centre criteria.¹⁴ Our final definition encompassed the following criteria: Most of the title in question must be offered on the Web; the journal must be peer-reviewed; the majority of the articles must be in English; the title must be published regularly rather than existing as a solitary publishing exploit; and finally, no fees or registration are required to access the articles published within. This formed the basis of our definition; however, we were to find that some of these criteria lent themselves to further investigation. We also discovered other criteria to include for further research, as discussed below.

Previously, one of the article authors had compiled a list of free e-journals falling into various subject categories for the ECU E-Journal Locator project. In order to gather a more substantial amount of data for this project, we investigated various Web sites that proved invaluable for extending our initial set of titles. Among these sites are the University of Houston's *Scholarly Journals Distributed Via the WWW*,¹⁵ the International Consortium for Alternative Academic Publication (ICAAP),¹⁶ the *Directory of Electronic Health Sciences Journals* at Monash University of Australia,¹⁷ AcqWeb's *Directory of Journals, Newsletters and Electronic Discussion Archives*,¹⁸ *Internet Free-Press Journals*,¹⁹ and finally, titles discovered through other resources or via serendipitous Web browsing. Of these titles, we eliminated all that were described as offering free full-text access for a limited time, the logical conclusion being that the titles would then transition to a fee-based format.

Another issue of some concern was that of registration. Many medical titles are currently offered via Medscape, an online medical community that requires user registration for access to the free content within. While this does pose a barrier to access, the material within remains peer-reviewed as well as timely. It was felt that for undergraduates this would indeed become an obstacle, but the targeted community would simply take the registration in stride. This belief was confirmed through anecdotal evidence in our discussion of the topic with some residents and physicians affiliated with the nearby teaching hospital. While these titles will most likely be added to the locator database, it remains undecided whether to include these titles in our formal study.

Due to the increasing number of titles to investigate, it was necessary to divide the research process between the authors. The logical division was by

broad subject categories since our titles fell within the social sciences and sciences. The subject librarian with responsibilities in the social sciences evaluated the social science and humanities titles, while the librarian with science responsibilities assessed those titles.

At this time, we engaged in a literature review to investigate various facets of our topic, including the evolving nature of scholarly communication in an increasingly digital academic society and the eventual economic impact of free e-journals upon the publishing industry. Another issue we investigated was the stability of Web-based serial publications, one related to the concern of archival access. This issue is of utmost concern to the academic community at large, for if a title offers unique and valuable information, yet provides no archival assurance and ultimately disappears, so, obviously, does the content. This issue underscores the oftentimes ephemeral nature of Web publishing, a subject that causes information professionals to proceed with caution as we move toward formally selecting free materials for our user communities.

We also searched for articles discussing the research process itself and the necessity of publishing as a form of scholarly communication among academic librarians. Our search comprised database searching (*Library Literature* and EBSCOhost's *MasterFILE Premier*), as well as browsing various Internet sites. Using the latter approach, we found a great deal of information at the Harrassowitz Web site, *Electronic Journals: A Selected Resource Guide*.²⁰ This site included valuable information regarding locating electronic journals, lists and directories, electronic journal providers, definitions and a history of electronic journals, usage studies of electronic journals, standards, legal and academic issues, archiving, reference linking and pre-print servers, and current awareness information on the issues surrounding electronic journals.

Another key source was the *Journal of Electronic Publishing*,²¹ itself a Web-based publication, and the University of Houston's *Scholarly Electronic Publishing Bibliography*,²² as well as various discussion threads on the *Serialst* listserv. The discussions from the listserv mostly focused on the economic impact of e-journals on the publishing industry, although a few were directed at the use of multimedia within the e-journals. All of these sources inspired a number of thought-provoking brainstorming sessions that gave our project impetus for future directions.

For the purposes of the initial project, however we decided to focus on basic quantifiable data, and thus gathered the following: number of journals by discipline; number and percentage of Web-only journals versus electronic versions of print publications; number and percentage of journals offering multimedia content (streaming audio and video); number and percentage of journals offering interactive access (allowing readers to comment on articles either as a separate component or via an interactive message board); statistical breakdown by type of publisher (university, professional society or for-profit); and a statistical breakdown by frequency and regularity of publication.

With respect to our actual research processes, the description by Rebecca Watson-Boone of "practitioner-researchers" is especially apt as "they approach projects and problems in ways that yield (1) solutions, (2) an enlarged understanding of their actual field of work — their practice — and (3) improvements in that practice."²³ The research in which we are currently engaged is action research; as Watson-Boone points out, this type of research "presupposes that something will be changed as a result of applying this method to a problem and that those affected by the problem must be involved in the research effort."²⁴ Our project is dynamic when viewed in these terms insofar that we are examining an issue increasingly integral to our daily professional activities as a reference librarian and a serials collection development librarian. This research will modify our understanding of free e-journals and the concomitant issues of selection, access, and impact on our fee-based serials collection. Accompanying these changes will be an enhanced knowledge of the free e-journal phenomenon and improved access to these titles.

Interestingly enough, each author had a different approach in collecting the data, based upon his or her daily experiences in public and technical services. One made general notes including the title, URL, ISSN, publisher, frequency, archive dates, whether the title was electronic only or had a pre-existing print version, extra software requirements, and any special utilization of its Web format (links, searching, etc.). As a reference librarian with a humanities/social science background, his primary concern was with end-user access. His approach to the research and evaluation process was more intuitive and less quantitative than that of his colleague.

The other librarian noted the same

information and developed an Excel file in order to track the above data and manipulate extra data. Because the second author was (1) responsible for examining the science and medical titles and (2) a technical services librarian, different issues came to the forefront of her research. These included the presence of a distinct ISSN for the electronic title; whether the title was indexed and where; the availability of TOC notification; the need for registration; the amount and type of advertisement (i.e., Java or Shockwave banners) within the journal; the availability of continuing medical education credits; and the availability of MARC records for the titles for future inclusion in the online catalog.

Our differing methodologies are a reflection of our vantage points (public services and technical services) within the library profession. This project is an excellent example of the value of collaboration between librarians in two very distinct areas of the field. The technical services librarian focused on issues particular to providing access to the materials and their resulting impact on the rest of the collection. For example, if it were decided to include these titles in the online catalog, the catalogers would profit greatly from the availability of MARC records. If MARC records were not available, then a decision would need to be made regarding original cataloging. This would, in turn, be based on the amount of time the original catalogers would have available to dedicate to this project, the cost of uploading the records to OCLC, and the potential impact such OCLC inclusion would have on the interlibrary loan workload.

Another example is analyzing the effect of free titles on the remainder of the serials collection. Again, if it were determined that stable, free e-journal titles should be considered valid materials and formally added to the collection, we must incorporate these new tools into our methodologies for collection evaluation. This brings up the question of the impact of free scholarly e-journals on the use of our fee-based serials collection, especially if these journals begin to have an impact on scholarly communication and hence, an economic impact on the publishing industry. A number of methods, in combination, could give librarians an idea of this impact, including tracking hits through the local OPAC and via any Web-based mode of access; examining the impact of the titles on scholarly publication through citation analysis; and evaluating the relevance of the

titles to the institution's educational goals by assigning LC subject headings.

The public services librarian, on the other hand, approached this project from the perspective of the end-user, a view shaped by working directly with students and faculty at the reference desk, in library instruction sessions, and as a subject specialist. He emphasized, for example, the issue of whether articles were provided in HTML or PDF and the impact this would have on end-users in terms of required hardware and software. Also, the question of barriers to user access was one he approached from a different perspective than his colleague. Required registration, for example, is much more likely to deter undergraduates or general users from a Web site than the medical specialists with whom his colleague is more familiar.

This divergence of background and outlook between the two authors has not been a problem or obstacle to progress. On the contrary, it has proven to be a tremendous advantage in terms of broadening the scope and understanding of the issues associated with this project. Both librarians have been exposed to a much wider understanding of the free e-journal question and its implications than had they pursued this research on their own or with a colleague of similar background.

In spite of their different service perspectives, both librarians share an overriding concern with access. Michael Fosmire and Elizabeth Young's essay in the most recent issue of *College & Research Libraries*²⁵ analyzed the amount of access ARL libraries provide to free scholarly e-journals and brings to the forefront of our professional discourse the overriding issue of access. Each library must struggle with the question of how best to support the needs of its user community by providing them the means of finding information. Many libraries use multiple methods to provide this information by using both the local online catalog and the library's Web site. This raises the issue of selection and selection guidelines, however, as well as inventory control, as the URLs must be checked at all points of access on a regular basis to ensure stability of access.

The final stage of the research process will involve interpreting the data we have gathered and publishing our conclusions in an article. As we move toward the final process of analyzing our results, several trends are becoming apparent. We expect to find that the sciences are more inclined to use the Web

as a method for scholarly communication. It appears that the medical sciences are particularly engaged in using the Web for communication. While medical journals are not the most expensive, with the average 2000 cost at \$663.21 (in comparison with chemistry and physics titles at \$1,302.79),²⁶ it will be interesting to see what their impact will be on serial costs and, hence, library acquisition budgets.

Many medical journals, such as the *British Medical Journal*, *American Family Physician*, *Canadian Journal of Rural Medicine*, and *Annals of Medicine*, offer free access to their electronic content while maintaining the alternative of a fee-based print subscription. Furthermore, 99% of the titles checked are indexed in Medline or EMBASE, thus increasing the potential for free scholarly and professional communication. In conjunction with the recent NLM venture into free scholarly communication via PubMed, we begin to see a change looming on the publishing horizon. With the advent of the Cross-Ref endeavor, fairly diverse types of journals will become more integrated with one another.

The evolving picture reveals the potential for both fee-based and free e-journals being indexed in major A+I resources, and linking to one another as well, taking greater advantage of the Web's unique nature and thus improving the possibility for "virtual" scholarly communication. Among the primary influences on this potential scenario will be the researchers themselves as they choose where to publish their academic contributions. If such a model of academic communication prevails, the future ramifications will be in the scientific rapid communications journals and will subsequently have a financial impact upon commercial publishers. Unfortunately, according to Fosmire and Young's recent findings, libraries are not providing access to free e-journals commensurate with the notification provided by indexing services.²⁷ In order to effect any change in the prevailing scheme of academic communication, libraries will need to reexamine their selection criteria to include these free titles.

Conclusion

Research can become a natural extension of daily professional activities; seemingly mundane subjects can lead to informative research topics through the research process itself. Librarians especially can take advantage of being practitioners as the burgeoning nature of information technology affects both

public and technical services. Whether teaching clients to locate and evaluate information from numerous diverse resources successfully, realigning budget expenditures, or selecting and providing controlled, standardized access to discrete bits of information in the catalog or at the Web site, all librarians must work at an almost frantic pace to maintain a working knowledge of resources, modes of access, publishing trends, and evaluation methods. It is possible, however, to realign our professional workflow to engage in scholarly communication through the research process.

The current project, which originated from selecting free e-journals for Joyner's E-Journal Locator database, contained a number of these diverse issues of interest to the library community: the economic impact of free e-journals on library budgets, the mechanisms providing access to information, the constantly evolving nature of scholarly communication, and collection evaluation methodologies. Ultimately, as Watson-Boone notes, "continuous learning is seen as a particularly attractive part of being members of a chosen profession."²⁸ Librarians constantly engage in continuing education by virtue of the inherently mutable nature of information structure and access. Such a profession lends itself effortlessly to the integration of research and practice.

As a result of this experience, here are some lessons learned that may be applicable to other librarians wishing to engage in research, and to integrate research into their overall professional practice:

- Pick a topic arising from daily professional practice. For example, if you are having difficulty finding a suitable research topic, you can possibly find a topic in a practical project or study currently underway or already completed. The most effective and interesting research is often that which is tied directly to daily practice.
- Collaborate with colleagues possessing a different background and/or service perspective. This will yield both a broader perspective on the topic at hand, and give insight regarding how librarians in other fields approach their work.
- Find ways to integrate research into your daily workflow. For example, by pursuing projects offering both research and practical benefits, you can successfully integrate both elements into a single workflow process.

- Remember that research is a dynamic process. During the course of the research project, some issues will fade in importance while newer ones will become apparent.

Above all, as noted at the beginning of this article, the best way to integrate research into one's overall duties is conceptually. Academic librarians must think of research and publishing as an integral part of their duties. Research and practice are best seen as two essential, synergistic elements of an overall work process, and not as polar opposites. By adopting such a view, librarians will find that their professional practice benefits, not suffers.

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