Information-Seeking Behavior of Science Faculty under a Challenging Economic Environment

Jiannan Wang
Systems Librarian, California State University, East Bay, U.S.A.
E-mail: jiannan.wang@csueastbay.edu

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Abstract
Understanding faculty information-seeking behavior facilitates academic librarians’ ability to adjust their collection development strategies and cancellation processes in order to provide more effective library services to their university communities. California State University, East Bay’s (CSUEB’s) University Libraries stepped up its ongoing cancellation project, starting in summer 2008. The primary goal was to reduce the online journals and databases through cancellation in order to cope with the state budget crisis. In order to determine the project’s effect on the information-seeking behavior of members of the science faculty, especially its effect on their choices of journals and databases in the online environment, a survey was conducted in summer 2009 to evaluate the impact of the year’s decisions. The results showed the science faculty’s preferences in regard to journals they monitor regularly and the databases they prefer to search. Findings also included the impact of the Libraries’ project on science faculty’s information-seeking behavior.

Background and Purpose
California State University, East Bay (CSUEB) is located in the center of the San Francisco East Bay area. It is composed of the Hayward campus, the Concord campus, and a Professional Development and
Conference Center in Oakland, California. According to CSUEB's institutional data, the University had an overall full-time enrollment headcount of 11,298 in fall 2009, with most students studying on the Hayward campus. The University Libraries consist of a main library located on the Hayward campus and a branch library located on the Concord campus. Most library employees work in the main library, with one librarian and a few student assistants working in the branch library.

Due to the state budget crisis, starting in summer 2008, CSUEB librarians set up criteria and procedures to cancel many online journals and databases. They developed a three-tier cancellation list. Factors included: the new, lower, budget allocation; the dollar amount that needed to be cut; the cost of each database; statistics for the number of hits on each database and journal; and whether each database was available through the CSUEB Libraries subscriptions, through a consortium, or part of a system-wide subscription package with other libraries in the California State University system. Tier One journals and databases were first cancelled in fiscal year 2008-2009. Cancellation notices were sent to the vendors within the same time period, but the actual date of cancellation varied throughout the year depending on when the subscription expired. Therefore, the impact of the project on the University's academic study and research took effect at various times from right after cancellation to as much as a full year later.

The major purpose of this research was to understand whether CSUEB science faculty's research or teaching activities were impacted by the Libraries' cancellation project during 2008-2009, since many cancellations fell into the science category. In the meantime, it was important to try to understand science faculty preferences for particular journals and databases so that librarians could adjust collection directions and make further cancellation decisions if more would be required in the coming year. In addition, after working with science faculty at CSUEB for almost two years, the author felt it necessary to be more pro-active in attempting to understand science faculty information needs. This feeling is not uncommon, as it is similar to the feelings described by Quigley, Peck, Rutter, and Williams (2002) in the purpose section of their research.

Methodology

To explore these faculty preferences, a survey was designed in SurveyMonkey in summer 2009, one year after the cancellation decision was finalized and campus departments were informed. The survey consisted of three (3) sections with thirteen (13) questions, some single choice, some multiple choice, and some open-ended. The first section was designed to gain a basic understanding about the normal information-seeking behavior of science faculty at CSUEB. Questions in this part were inspired by ideas in the survey of academic scientists conducted by Hemminger, Lu, Vaughan, and Adams (2007) at the University of North Carolina at Chapel Hill. The second section focused on clues and implications about changes in the science faculty's use of the Libraries' information resources in the past year, and the possible reasons for those changes. The third section sought comments and suggestions. A print version of the survey is included in the Appendix.

After the survey was designed, it was sent to the University's Institutional Review Board for approval. Upon receiving approval at the end of July, an email notice with a link to the survey was sent to all faculty in the College of Science. The survey was open for two weeks and closed in mid-August.

The College of Science at California State University, East Bay is composed of nine (9) departments: Biological Sciences, Chemistry & Biochemistry, Engineering, Earth & Environmental Sciences, Mathematics & Computer Science, Nursing & Health Sci-
ences, Physics, Psychology, and Statistics & Biostatistics. There are ninety-three (93) tenured and tenure track faculty; the eighteen (18) respondents representing Biology, Chemistry, Mathematics & Computer Science, Statistics & Biostatistics, Psychology, and Physics comprised nineteen percent (19%) of the tenured and tenure track science faculty.

Results and Analysis

According to the results, more than half (56.3%) of the respondents used the Libraries' information resources several times a week for their teaching or research activities (see Figure 1). Cal State East Bay is mainly a teaching university; therefore, it is understandable that some of the faculty uses the Libraries only a few times a month (18.8%) or a few times a quarter (18.8%) to search information for teaching purpose only.

The idea of using print journals to substitute for online equivalents was at one point proposed in one of the Libraries' budget discussions. Because the online versions of some frequently used journals cost more than their print equivalents, some librarians suggested that the Libraries return to print versions in order to alleviate the burden of the collection budget cut. Results from the survey, however, showed that over 70% of the faculty use mainly electronic journals, with only 17.6% using the print (see Figure 2). This indicated that returning to print equivalents as a cost-saving measure, especially for those journals heavily used in the sciences, may not be welcomed by science faculty, since most of them appear to be used to the electronic format and may not find it convenient to return to one that is paper-based. From this research, CSUEB librarians should now have a better understanding of science faculty views on this issue.

In designing the journal preference question, the author agreed with the idea discussed by Christie and Kristick (2001) that the simplest approach would be the best and, as a result, the respondents were asked directly which journals they preferred. In analyzing the results, the author found that even though the Libraries can access thousands of journals in almost every subject area through database subscriptions, most of the science faculty (82.4%) monitor no more than six (6) journals in a month, and many of these faculty (53%) monitor no more than three (3) journals regularly (see Figure 3). This finding indicated that it is important for liaison librarians to be able to identify which titles are most important to their liaison departments, so that these materials can be protected from future cancellation, thereby minimizing the impact on research and teaching activities. This survey also asked respondents to list the titles involved, providing a good reference list for science liaisons. The titles are listed in Table 1.

![Figure 1](image_url)  
**Figure 1** Responses to question: How often do you use the Libraries' website to find information for your teaching or research?
Figure 2  Responses to question: What percent of your journal use is in electronic form?

Figure 3  Responses to question: How many journals do you monitor on a monthly basis?

Table 1  Journal preferences of CSUEB science faculty

<table>
<thead>
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<th>Subject</th>
<th>Journal Titles</th>
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Figure 4  Responses to question: Which database or index do you use most often?
In addition to journal preferences, science faculty also has favorite databases (see Figure 4).

The results showed that ScienceDirect was the most heavily used (35.3% of respondents), and Web of Science was the next most heavily used (23.5% of respondents). The author was not surprised to see ScienceDirect at the top of the list, since it has broad coverage, a user-friendly interface, and is full-text. It was also expected that science faculty would make heavy use of Web of Science and Figure 4 indicates that this is the case because it was the second most reported choice. Interestingly, however, according to the Libraries’ annual statistical analysis of Web of Science hits across the University, it is not among the highly used databases based on its overall hits. In addition, the database is mainly an indexing tool and costs more than most of the other currently subscribed databases. Further, it was purchased separately by CSUEB rather than through a consortium or in a package with other libraries in the CSU system. As a result, it was earmarked for future cancellation, and multiple discussions held over the years have repeatedly kept it on the list. This research clearly shows that although Web of Science may not have a large number of overall hits, it is important to science faculty at CSUEB. This enables librarians to re-evaluate the cancellation list and Web of Science’s position on that list.

Another interesting finding is that no respondents chose Academic Search Premier as one of their frequently used databases. This is somewhat of a deviation from the author’s perception because librarians reference that database frequently, based on discussions about database usage in librarian meetings and private conversations. They use it as a typical example of general databases when introducing databases in information literacy classes to first year students, when helping students at the reference desk, and when visiting subject classes to teach search strategies in various disciplines. This research reflects the fact that subject specific databases are more preferable to faculty for their research, while general databases, such as Academic Search Premier, may be more suitable for lower division students when presenting in classes or answering reference questions.

Readers may wonder about the low usage of IEEE (5.9%) in this study. The engineering department at CSUEB is comparatively small and no faculty from this department responded to the survey. When planning journal and database cancellations, librarians considered the many factors mentioned in the background section; however, understanding the project’s impact on the University, especially on the College of Science, adds a new dimension to the mix. According to the results of the survey, 60% of the science faculty admitted that the journals they monitored regularly in the past are no longer available (see Figure 5).
Another major cause of the lower use of the Libraries' resources may be due to the development of Google and other search engines, which attracted 40% of the respondents.

Overall, most science faculty were satisfied with the Libraries' collections in their research and teaching areas, with only 5.9% reporting that they were unsatisfied. With regard to the problems or difficulties in using the Libraries' resources, many thought that they needed more full-text online journals, and about 80% of them used inter-library loan services to borrow books or journals from other libraries. In these economic times, lack of full-text materials is perhaps the most common problem existing in many academic libraries. Thanks to the fast development of Google and other web search engines, about 60% of the faculty replied that they would use these tools to find information if they could not find it in CSUEB's libraries.

**Discussion**

The goal of this survey was to understand CSUEB science faculty's information-seeking behavior and the impact of the Libraries' cancellation project on their teaching and research activities. The results will serve as a reference for CSUEB librarians to create a priority list of journals in the sciences, and will guide librarians to refine the Libraries' science collection further.

Although the survey was conducted only with the science faculty at CSUEB, it could easily be adapted to other academic disciplines. In addition, the results can be used as a reference for other libraries with settings and cancellation projects similar to the ones in the University Libraries at CSUEB.

The method employed in this research was a concise survey. A more comprehensive survey could have been designed to capture the faculty's needs from different fields and different aspects; however, in order to motivate more participation, a concise one was chosen. For future study, methodologies such as a focus group could be used as a complement to the survey in order to get both quantitative and qualitative data. In addition, the survey analysis could concentrate on the information-seeking behavior of science faculty at the departmental level, which is similar to the analysis method used by Brown at the University of Oklahoma (1999). It would also be interesting to apply the deep log analysis (DLA) technique introduced by Nicholas, Huntington, Jamali, and Watkinson (2006) to assist in understanding the science faculty's journal and database usage.

A major drawback of this survey was its low response level, which should have been higher to be more representative. The survey was conducted during the summer term, when it was thought that most faculty would have time to respond; however, as faculty were away from the University, although still potentially connected via email, the response rate was not as high as desired. In addition, this research was conducted independently, without the benefit of a research grant. In order to attract more attention to the survey and improve synergy, a grant could be used to market the survey in a more vigorous manner.

**References**


