

# Why Conduct User Studies? The Role of Empirical Evidence in Improving the Practice of Librarianship

by

*Barbara M. Wildemuth*

Professor, School of Information and Library Science  
University of North Carolina at Chapel Hill, U.S.A.

to be presented at

“Fine-Tuning Information Strategies”,

INFORUM 2003: 9th Conference on Professional Information Resources,  
Prague, May 27-29, 2003

**Abstract.** To conduct a user study requires a significant amount of time and effort. The understanding of user behaviors that can be gained through a particular user study must be valuable enough, in terms of improving the practice of librarianship, to make the effort worthwhile. A rationale for evidence-based librarianship, based on studies of user behaviors and the information needs that motivate those behaviors, will be presented. This rationale will be illustrated with several example studies, each of which provided empirical evidence that can be directly applied to the improvement of library practices (such as the development and marketing of reference services, the design of training programs for library and database users, and the design of online library systems). The importance of considering the context in which people seek information from libraries will be discussed, as well as the importance of considering the specific characteristics of the library’s patrons.

## INTRODUCTION

As new electronic information resources are introduced in libraries, the eyes of the library’s users are opened to new possibilities for obtaining the information they seek. For example, if a library user can come to the library and conduct a database search online rather than through printed indexes, hours of painstaking labor can be saved and that time can be used to work with the desired materials instead of being used just to find appropriate references. If the library takes the next step and provides remote access to the database, the database becomes more physically accessible to the library user (though it may simultaneously become more difficult to use because a librarian is not nearby to provide assistance in formulating an effective search strategy). If the library also takes

the step of providing full text of journal articles in electronic form, the library user may be able to complete a significant amount of his or her research work without entering the library. Instead of the user coming to the library, many of the library's resources have come to the user.

The changes just described can trigger dramatic changes in the library environment. Libraries will be faced with many decisions about how to organize their services and materials in order to adapt to these changes. Only by conducting user studies can librarians understand how the move to electronic resources is affecting the library's users and how the library's services can be modified to have the most positive effects. Only by gathering evidence about library users, their interactions with library services and materials, and the context in which those services and materials are used, can librarians make sound decisions for the future. In this paper, I will outline the reasons for conducting user studies, the ways in which user studies can be conducted, and how the results of user studies can be used to improve the practice of librarianship.

### **WHY SHOULD YOU CONDUCT USER STUDIES?**

In the field of medical practice, large-scale clinical trials and systematic reviews of those clinical trials are regularly conducted in support of "evidence-based medicine" [Cochrane Collaboration, 2003; Cochrane, 1972]. This concept has already been applied to the practice of medical librarianship [Eldredge, 2000] and other areas of librarianship [Dahlgreen, 2002; Marshall, 2003; Williams, 2002]. By using empirical evidence as the basis for decision making in library management, we have the potential to make great strides forward in the practice of librarianship. In other words, if we know more about the people that our libraries and information centers serve, it is much more likely that we can serve them effectively.

But just a vague desire to know more about the people we serve and the information needs they have is not enough to guide us in designing and carrying out a user study that will provide useful empirical evidence. For each study, you will need to formulate a specific question that will be answered by the results of that study. Reviewing existing studies on related issues will provide some guidance in specifying your research question. Even descriptions of library practices in your own and in other

libraries could be useful in identifying the specific question on which you need to focus your efforts.

Your research question will fall into one of two categories: one that tries to broadly generalize to or represent a population, or one that tries to explore the phenomena of interest in some detail. The first would be addressed by *extensive methods* that lead to general statements about the population; the second would be addressed by *intensive methods* that lead to understanding of patterns of behavior or themes of interest in the particular setting [Solomon, 2003]. Extensive methods investigate the characteristics of the entire population you serve or a large proportion of that population. They may ask about the population's background, their information needs, or the contexts in which they seek information. For example, you may need to conduct a study to find out who is currently being served by your library and who, among the intended audience, is not being served. In such a study, you may want to know the characteristics of each group, such as the discipline in which they are educated or that they are currently studying, the amount of education they have, their prior experience with library materials, or the urgency with which they generally need library materials. By contrast, intensive methods focus on a particular (usually small) set of people in a particular situation. This group is studied intensively, usually focusing on multiple aspects of their information behaviors simultaneously. For example, you may wish to understand how teenagers go about completing school assignments. Their motivations and attitudes toward the assignments will be of interest, as well as the entire array of resources used (both library resources and other types of resources). The timing of their use of information resources may be of interest, as well as the physical and computer tools they use to gather and manipulate the information they find. In other words, you will look very carefully at this particular group of people within this particular situation; the goal of the study will be to understand the situation as completely as possible.

Thus, the first step in a move toward evidence-based practice of librarianship is to select the question to be investigated. The question should be stated very clearly, so that the goals of the study will not become muddled. The question may be specific to your library or more general – applicable to many similar libraries. It may be pertinent to an existing library service or to a new service, to a particular group of library users or to a

group of people not currently using the library. In any case, you should try to state the question in a single sentence, being careful to have a clear understanding of each word. Once you know exactly what you want to ask, you are ready to design and carry out your study.

## **HOW SHOULD YOU CONDUCT USER STUDIES?**

A variety of research methods, both extensive and intensive, have been applied in studies of library users. Which of these methods is most suitable for your study depends on your question. Several studies and their methods will be described here, to illustrate some of the questions about library users that may usefully be investigated.

Surveys and structured interviews are two types of extensive research methods that can be useful. For instance, a recent graduate from the University of North Carolina, Corey Johnson, was interested in projecting future demand for virtual reference services, particularly the use of real-time chat tools to provide reference services [Johnson, 2002]. He surveyed students and faculty at two North Carolina universities, asking them which reference services they had used (face-to-face, telephone, email, online chat) and which they expected to be most heavily used in ten years. He also asked about the time periods when the respondents were most likely to use online chat reference, as well as which features they believed would be most helpful (escorted browsing, sharing the completion of a transaction, transcript reception, or voice over IP). These results can be used by academic librarians in planning future reference services. In addition, they can inform librarians about the best ways to market these services to their potential users. Highly structured survey methods, such as those used in Johnson's study, require some careful advance thought, to ensure that appropriate questions are asked of the appropriate respondents. The results will be especially useful if several libraries can cooperatively survey their communities.

While structured surveys and interviews are relatively easy and inexpensive to administer, they are limited in the types of questions they can address [Hernon & Schwartz, 2000]. Another possibility is a more open-ended interview process, such as that used by Kuhlthau and her colleagues to compare the search processes used by the patrons of academic, public and school libraries [Kuhlthau et al., 1990]. Study

participants completed three instruments: a Process Survey, which included a number of open-ended questions (e.g., Describe your topic in a short paragraph); a Perceptions Questionnaire, through which people rated the cognitive and affective aspects of the process; and a Flowchart of the search process, to be drawn by the study participant. The responses to the open-ended questions had to be coded by the researchers before they could be analyzed further. For example, the topic descriptions were coded as general, narrowed, focused, or other. The flowcharts were used to understand the current status of the search: initiation, midpoint, or closure. This was a large-scale study of library user behavior, involving 385 library users of 21 libraries. The results have implications for practice in both reference services and in providing library instruction. The authors recommended that reference librarians be aware of users' emotional needs and include questions about the users' search progress during the reference interview. The model of the search process found in this study can be used as part of a library instruction program, so that library users can gain a better understanding of their own navigation of the search process over time. Because the scope of this research was quite large, these findings have the advantage of being generalizable to a wide range of libraries; however, they have the disadvantage of being abstract enough that some additional effort will be needed to apply them directly to a particular library's planning.

Other studies have used intensive research methods. In-depth interviewing was used in Cool's [1993] research on the information seeking of humanities scholars. She was motivated by the observation that humanities scholars tend *not* to use online databases, even when those databases contain references that are potentially useful. Her in-depth interviews of eleven scholars in philosophy, English, and history revealed issues centered on the scholars' self-perceptions and professional identity. A component of their professional expertise is "knowing the literature" in their area of scholarship. To confront an online database is to invite a challenge to that expertise. These scholars were willing, however, to work with reference librarians and archivists to identify useful information, because they viewed these people as colleagues and respected their complementary expertise. These results suggest that, as libraries introduce online databases to humanities scholars, they should plan for an appropriate level of intermediation by librarians.

Another, more exploratory, use of intensive methods is illustrated by the work of myself and my colleagues as we develop a digital library of video materials [Wildemuth et al., 2002]. People experienced with using digital video were recruited as study participants. They were asked to interact with several video surrogates, i.e., smaller objects that can stand in for the videos in the collection, analogous to abstracts standing in for documents. As they interacted with these video surrogates, the participants were asked to think aloud; they were also asked to comment on the strengths and weaknesses of each video surrogate. They provided detailed data on the usefulness of each surrogate and, in particular, the situations in which each might be most useful. The results of this study were intended to support our design of a digital library of videos, including the web interface to that library ([www.open-video.org](http://www.open-video.org)), and are being incorporated in that design.

Intensive methods also include quantitative approaches, such as the analysis of the logs of users' online interactions. One study using such methods was conducted by myself and Margaret Moore (Wildemuth & Moore, 1995). We investigated the online searching behaviors of 161 third-year medical students by capturing and analyzing their search logs. The logs were captured automatically, and then coded in terms of the tactics used. Three health sciences librarians rated the quality of the searches and also identified missed opportunities in the search strategies. It was clear that the students' searches could be improved with syntactical and other types of vocabulary support; these improvements could be made by adding functionality to the online searching system and through library instruction programs.

The few examples provided here suggest some of the wide range of research questions that can undergird evidence-based librarianship and the methods that can be used in the study of library users' information needs, their information seeking behaviors, and their use (or non-use) of library resources. The choice of a particular research method should be motivated by the question that is being asked in the study. It is most important that the research question be clearly stated, so that it can guide the development of the research approach. The population to be considered in the research should be defined, and plans made for selecting an appropriate sample from that population. The method of data collection will vary, based on the quantity and type of data needed. Examination of prior research addressing the same or similar questions can

be examined for the methods that they used. The methods of data analysis should be selected to provide the most value from the data collected.

### **WHAT SHOULD YOU DO WITH THE RESULTS OF YOUR STUDIES?**

Once you have the results from a study, you will draw conclusions from them and then take action based on those conclusions. There are at least three ways that you can apply the evidence you've gathered to improving your library operations. The first is to use this evidence as the basis of decision making within your library. For example, the results of Johnson's [2002] study could be used to plan the timing of a library's implementation of online chat reference services, and then to develop a program for marketing those services. Both Kuhlthau's [1990] and Cool's [1993] results could have been used to develop some in-service training for reference librarians on how to augment their typical reference interviews. Your research question will have been selected because it pertains to a decision you are facing. In interpreting the results of such studies, you will want to pay close attention to the context in which the services are being used. By interpreting your results in light of this context and in relation to prior studies on similar issues, you will be able to make a better decision – a decision that can improve the practice of librarianship in your library.

A second way to use your research results is to influence the vendors of online searching systems or the publishers of other library resources. It is very possible that searching problems can only be remedied through redesign of the search system. For example, the results from Wildemuth and Moore [1995] suggest ways to improve vocabulary support that could be implemented by the online vendor. By presenting your results to the search system vendor, you may be able to positively influence the design of the system for all its users. It is very possible that your research will identify publications or other resources that are not currently available and would be very useful to your library patrons. By presenting these results to an appropriate publisher, you may persuade them to create such a resource. I would encourage you to be optimistic in your interactions with vendors and publishers, and to work together to encourage them to make changes that will have a positive impact on your library and your library's patrons.

A third way to use your research results is to support your own development of library systems, either for your individual library or for a consortium of libraries. Clearly, studies of people interacting with current systems you have developed can lead to improvements in the effectiveness of those systems. You may also be interested in experimenting with new systems that are not yet publicly available. Our work with a library of digital videos [Wildemuth et al., 2002] has led us in this direction. While such development projects may stretch the resources available in individual libraries, they have the potential to advance the practice of librarianship across multiple libraries.

## CONCLUSION

For decades, academic researchers in library science have used the experiences of librarians to identify research questions of interest. Once such questions were identified, the researchers took it upon themselves to define and carry out studies that addressed those questions. However, progress in the field is limited because the number of researchers is very small. The practice of librarianship can advance much more rapidly if librarians also view themselves as partners in the enterprise of evidence-based librarianship. Some studies that you conduct will be small in scope and will pertain only to one service within your own library. Others may be larger in scope, or they may have a broader impact on librarianship generally. I hope you will take up the challenge of conducting studies that you view as most important, and will share the results of those studies with your colleagues. In this way, library services can be improved for all our library patrons.

## REFERENCES

- Cochrane, A. L. (1972). *Effectiveness and Efficiency: Random Reflections on Health Services*. London: Nuffield Provincial Hospitals Trust.
- Cochrane Collaboration. (2003). <http://www.cochrane.org/>. Last accessed on April 11, 2003.
- Cool, C. (1993). Information retrieval as symbolic interaction: examples from humanities scholars. *ASIS '93: Proceedings of the 56th ASIS Annual Meeting (Columbus, OH, October 24-28, 1993)*, 30, 274-277.



- Dahlgreen, M. (2002). Better libraries through research: using research to inform library practice. *OLA Quarterly*, 8(3), 2-9.
- Eldredge, J. D. (2000). Evidence-based librarianship: an overview. *Bulletin of the Medical Library Association*, 88(4), 289-302.
- Hernon, P., & Schwartz, C. (2000). Survey research: a time for introspection. *Library & Information Science Research*, 22(2), 117-121.
- Johnson, C. M. (2002). Online chat reference: the awareness of, use of, interest in, and marketing of this new reference service technology. Masters' thesis, University of North Carolina at Chapel Hill. <http://ils.unc.edu/MSpapers/2755.pdf>. Last accessed on April 12, 2003.
- Kuhlthau, C. C., Turock, B. J., George, M. W., & Belvin, R. J. (1990). Validating a model of the search process: a comparison of academic, public and school library users. *Library & Information Science Research*, 12(1), 5-31.
- Marshall, J. (2003). Influencing our professional practice by putting our knowledge to work. *Information Outlook*, 7(1), 40-44.
- Solomon, P. (2003). Personal communication.
- Wildemuth, B. M., Marchionini, G., Wilkens, T., Yang, M., Geisler, G., Fowler, B., Hughes, A., & Mu, X. (2002). Alternative surrogates for video objects in a digital library: users' perspectives on their relative usability. Presented at the European Conference on Digital Libraries (ECDL), September, 2002.
- Wildemuth, B. M., & Moore, M. E. (1995). End-user search behaviors and their relationship to search effectiveness. *Bulletin of the Medical Library Association*, 83, 294-304.
- Williams, I. (2002). Evidence based practice: the sustainable future for teacher librarians. *School Library Bulletin*, 8(2).  
<http://www.education.tas.gov.au/0278/issue/022/sustainablefuture.htm>. Last accessed on April 12, 2003.