Issues in Refining Digital Library User Surveys for General Versus Specialized Audiences

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ABSTRACT

In this paper we describe the process of developing a lightweight evaluation instrument for use by digital libraries. We conclude by identifying the major challenges we face in providing digital libraries with a set of tools that they can use to conduct their own evaluations.

Categories and Subject Descriptors

H.3.7 [**Digital Libraries**]: User Issues.

General Terms

Management, Measurement, Human Factors

Keywords

Digital libraries, evaluation, user studies.

1. INTRODUCTION

Digital libraries have to evaluate the services they provide and the needs and satisfaction of their users so they can improve what they offer and to secure funding from sponsors. But running digital libraries and evaluating them are seldom part of the same skill set. Because evaluation must be ongoing and integral to the digital library's operation, those who run digital libraries need a set of tools that they can use to do frequent and continuous evaluation on their own, without relying on the occasional services of evaluation consultants.

We describe the process of developing such a tool by refining a large-scale survey instrument for use by individual digital libraries. We describe the first stages of the development of the evaluation instrument by testing the survey with focused populations in a series of case studies. In the course of doing these case studies we have identified a number of critical challenges that need to be overcome if the concept of lightweight evaluation tools and methods for use by individual digital libraries is to be realized.

These challenges include the process of refining the survey through many iterations of working with individual libraries; the problem of identifying and locating users and non-users and the challenge of building trust with libraries both in the short and long term.

2. CASE STUDIES

2.1 Original Study – College Instructors

Understanding users of digital libraries entails more than approaching the known user base. For digital libraries to fulfill the vision that early proponents expressed, we must understand more about the needs of the potential users and non-users. To understand this population, we established a research protocol, which began with focus groups and culminated in a survey delivered to more than 4400 higher education instructors at more than 100 institutions [1]. The instrument had 105 items and addressed major themes including frequency of use of digital materials, search behavior, motivation for use, and barriers to use. The survey was designed to taken users 15-20 minutes, and employed skip logic to minimize non-applicable lines of questions. Even so there was significant attrition, though the rate was considered acceptable and testing indicated that the responses of those who dropped out before completing the entire survey were not significantly different from those who completed the survey. The participating institutions made survey invitations. We estimated response rate to be approximately 12% based on number of individuals contacted as reported by the participating institutions.

Of particular relevance for digital library creators are the following points:

- In focus groups, respondents had widely varying understandings of digital libraries, and even those who had been involved with digital libraries often had a limited understanding of greater "universe" of digital libraries.

This led us to focus of the types of resources that educational digital libraries usually contain, and the survey provided additional points

- The types of resources used most heavily were those that are easy to use, and would fit into existing curriculum and pedagogical activities. Those that might be assumed to be more difficult to use are used less frequently.
- Respondents identified search though search engines as a primary mechanism for identifying resources.
- The respondents were motivated by improving their teaching with three of the top factors including the use of materials improved student learning, that they used the materials to keep their teaching fresh, and that it helps them teach about difficult concepts.
- Interest in collections of digital resources was focused on quality of items in the collections and ability to find it and less in materials that support the use of the materials in teaching or in professional development as a teacher.

2.2 Discipline-centered Case Study

As a first step in the effort to develop a more refined and scalable evaluation tool that individual libraries can use for themselves we took the survey instrument just described and applied it to a smaller and more focused case study. This case study examined the use of digital libraries by physics higher education faculty members and K-12 teachers. In order to get as large a sample as possible and to make sure that we garnered the views of as many digital library non-users as possible we expanded the sample beyond the users of the physics community and digital library ComPADRE (http://www.compadre.com) to include members of the American Association of Physics Teachers (AAPT).

At the start of the case study we made some substantial changes to the survey instrument based on our experience doing the earlier, broader study. The major changes included making the survey shorter, adding questions about technologies whose use had become widespread only since the original survey was administered and asking more granular questions about the types of technologies used.

These changes were made as a consequence first of analyzing the results from the previous survey and reflecting on the effectiveness of each question and the value of the data they yielded. Additional consultations were held with leaders from the digital library collaborating in the case study to identify questions and areas of particular interest to them and areas of concern.

The original sample of users from ComPADRE and AAPT numbered just over 12,000, however many of those addresses proved not to be valid and the final sample count is under 10,000. Given the number of usable responses we have received is just under 1,500 the final response rate is somewhat over 15%.

Our preliminary results are broadly reflective of the larger and earlier study. They have raised some interesting questions about the survey tool itself. For example, a far larger proportion of our respondents than anticipated were either high school or middle school teachers (roughly 50% of the total respondents). This contrasts with our earlier study, which was focused on faculty in higher education. Beyond the obvious question of how much usage varies between these two populations, it does also raise the question of whether the same instrument can be used for the two varying populations.

2.3 Adaptation for an institution

Our second case study was of faculty at multiple institutions within the University of Wisconsin System. When focused at the institutional level, studies of users may take on a more pragmatic focus. In the case discussed here, the study seeks to better understand user needs in a search for an institutional learning object repository.

Research questions for the study included: information seeking behavior (what types of content people are using, where do they seek content) and issues of support (where do they use the content, who do they turn to for help, what kinds of services should a repository offer)

The survey was based on the refined instrument of the physics digital library survey. A goal of this implementation was to develop the survey that would take five to seven minutes to complete. To accomplish this goal, concessions were made that reduced the depth of understanding of amount of use by asking only whether the respondent used a class of digital content or did not use it. The survey used several open short responses, however, it was not intended that it would undergo formal content analysis, but would be used in the simply cataloging resources instructors found to be important. Representatives on individual campuses administered the survey and data is still forthcoming on response rate.

Preliminary results follow the pattern of our larger national survey. Respondents most often seek materials that readily fit into existing curriculum, search is primary mechanism (especially Google) followed by other external trusted sources (e.g. professional organizations). The strongest response in terms services needed through a digital repository was integration with campus services like the course management system.

3. LESSONS LEARNED

3.1 Survey Refinement

Refining the survey instrument is a highly iterative process and a good part of this process involves educating the end-user of the evaluation instrument about surveys and evaluation. This is especially so when working with individual digital libraries or institutions as in our case studies. Part of the process involves having digital libraries or institutions learn about and get used to the process of surveying users (and non-users and potential users). The users of the evaluation instrument are not necessarily going to be ready to shape the survey in ways they want or be able to identify what they want right away. That process is going to take time and you need to allow for that. This does raise questions about how best to offer customizable surveys, for example, matrix surveys. While these kinds of survey instruments are in some senses optimal for the kind of task they have in mind, they do assume a level of experience in survey use and construction, which is not necessarily always going to be the case. We need therefore to think of ways to offer customizable surveys that retain a degree of structure such that end user libraries can use them easily, without sacrificing the integrity of the tool and in a way that produces the outcome that is desired.

3.2 Identifying Users

We are going to have to find a good way to identify and locate both users and non-users. Digital library users lists (if they exist at all – in many cases they will not, for example in most digital repositories) are going to be incomplete, out of date and unreliable. We need to come up with some creative ways to measure the behavior and opinions of these users. One potential method could be "pop-up" surveys on individual pages within libraries. These however also have disadvantages, for example they would need usually to be shorter than might be optimal and also not all users enter collections via a splash page. Often users go directly to an item (which may be a PDF) and the pop up survey would thus be difficult to implement.

We need also to think through what we are trying to do by measuring non-users. Funders and managers of digital libraries are understandably keen for evaluators and digital libraries themselves to be able to measure opinions and interests of those who do not use a particular digital collection but might be interested in using it in the future.. But the issue of measuring the opinions of those who do not use a service raises a number of questions.

Is it possible to measure users and non-users using the same survey instrument? Often for the sake of brevity we channel non-users out of a survey by asking questions early on about whether they do or do not use digital libraries. This limits the amount of data we can collect about them. We may need to use a different survey tool to collect information from non-users or we may need to structure the instrument in a different way so that they aren't piped out of the survey.

Do we even really want to collect information from non-users? An argument could be made that asking non-users their preferences about digital libraries is difficult if they don't actually use these collections. Their opinions are in some cases perhaps not well enough informed.

3.3 Trust

Trust is a very important part of the process. This is obviously going to be less so when libraries are doing their own evaluation but in order to be able to work with libraries in order to develop tools you need to be able to earn their trust. This can be a difficult process and a willingness to be flexible throughout the process is particularly important. You are working with an asset that is enormously valuable to them: their users and their reputation. An important part of winning that trust is obviously the care you take in protecting both of these things but also it does come from the value you show the libraries in the data and the insight you can provide.

4. NEXT STEPS

Having utilized and expanded our research protocols with the associated survey instruments and items, we see the value in this ready pool of instruments. Thus, the idea of digital library of evaluation protocols (instruments and analysis recommendations), evaluation research results and data, and the associated community of expertise would appear to be worthy of discussion. This digital library would offer the potential of increasing the quality of evaluation, and the opportunity for meta-analysis of evaluation data across larger populations.

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6. REFERENCES

[1] McMartin, F., E. Iverson, A.Wolf J. Morrill, G. Morgan, C. Manduca. 2008. The Use of Online Digital Resources and Educational Digital Libraries in Higher Education. International Journal on Digital Libraries, 9(1):65-79.