

UNDERSTANDING FACULTY NEEDS OF DIGITAL RESOURCES AND LIBRARIES

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Theoretical approach

Use of a particular type of technology or resource is notoriously difficult to study. There are many different dimensions to use, and this complexity cannot be captured using a single research method. We are using a multi-method approach that will allow us to triangulate our research methods and our sources of data. Our approach begins with qualitative focus groups of faculty. The protocol is designed to allow themes to emerge based on responses to questions regarding digital resource and digital library use. This will be followed by a large-scale quantitative survey to give us an over-arching picture and identify broad trends, but such an approach will give us few details of the mechanics of digital library use because answers will be limited by the nature of survey responses. The quantitative survey supplements the qualitative data from focus groups and interviews of faculty to describe the process whereby faculty come to use libraries and what they perceive the obstacles and opportunities to be. This can be correlated with observations on real behavior like those described in Manduca, et al. (2005, D-Lib Magazine,doi:10.1045/may2005-fox) to examine what digital libraries provide, how faculty would like to use resources in digital libraries, and how faculty actually use digital libraries.

Methodological Approach

To grasp the full complexity of the nature of faculty use of digital libraries and to counter any potential weaknesses in any individual methodology, we will employ three different, yet complementary, methods to gather the data for this study.

1. Focus groups and interviews of science, technology, engineering, and mathematics (STEM) faculty
2. A national survey of higher education faculty
3. Usage tracking of SERC and MERLOT STEM materials by target faculty

We are conducting focus groups with faculty from a range of higher education institutions across the country, from community colleges to research universities, with broad representation across the STEM disciplines. The focus groups are being held at representative institutions. The protocol for these groups asks participants to describe how and when they attempt to locate and use the materials they find for instruction, if and how they share information about

teaching with their colleagues, and what roles communities of practice in which they participate assist their gaining and sharing teaching expertise.

Information gathered in these groups will be used to formulate a survey to be delivered nationally. Results from both the focus groups and survey will be shared with all National Science Digital Library (NSDL) projects and with the wider digital library community, and can be used now and in the future to understand the needs of users and to understand and overcome barriers identified by non-users.

We believe that these data will serve as a baseline for the long-term monitoring of the growth of faculty use of digital libraries that can be correlated with usage tracking to understand user behavior. In addition, the survey will be offered to allow other projects (including those targeting continuing education and K-12) to modify and use the survey to collect data on their target audiences and better serve them.

Research Questions

While the use of digital resources for teaching and learning by higher education faculty has increased, the growth of the use collections of materials does not appear to have kept pace with early expectations. This has the potential to make the cost of creating and maintaining these collections difficult to justify into the future. To increase the pace of utilization digital libraries must better address the needs of a wide audience of users, and not just for the relative few users who have been involved in their creation.

Specifically our research attempts to address these primary research questions:

1. What are the characteristics of online collections that make them useful for teaching?

Given the increased use of the web by faculty as a source of materials for teaching, where do digital libraries add value above and beyond standard web searching strategies? And, beyond increasing awareness of the existence of organized collections of digital resources, what can be done to make collections valuable throughout the teaching cycle (course design, implementation, evaluation)?

2. How do faculty employ materials in useful collections?

What types of materials are faculty looking for, and how would they like to use them? What kinds of support are required to allow faculty to make full use of these materials throughout the teaching cycle (course design, implementation, evaluation, revision)?

3. How are collections, resources, and services best aligned with faculty work patterns?

What implications do faculty use patterns have on digital library construction and organization? Can we align digital library practices with the demands of their roles as scholars?

While all these questions are framed in a the positive form, we have considerable interest in factors that discourage use, the formatting and delivery mechanisms of materials that are not of value to instructors, and barriers that arise that make libraries not useful to the way faculty work.

Introduction to Sample Populations

Past research by the investigators has examined usage by faculty in specific STEM disciplines: Engineering (McMartin), and the Geosciences (Manduca and Iverson). In this study, we have to date conducted focus groups with faculty from a range of STEM disciplines from a research university, a public comprehensive university, and a liberal arts college. We are currently arranging similar focus groups at additional institutions including community colleges and institutions serving underrepresented populations. The survey will take advantage of the partnerships within the MERLOT consortium, but will also look to institutions outside that framework. While the focus group protocol was limited to STEM faculty, the survey will not be exclusive to that population for both logistical reasons (it is often difficult for institutions to limit lists by discipline), and for comparison of STEM vs. non-STEM faculty. Also by faculty, we are including undergraduate instructors both in tenure and non-tenure tracks.

Issues Arising From Preliminary Research

While it is too early to generalize our results from the focus groups, we are getting some enlightening answers and many more questions.

One issue that we are encountering with our current protocol is not that there are widely varying understandings of digital libraries, though that certainly exists, but that there are frequently individuals who have never thought about digital libraries as a concept or as an entity. This presents a challenge for the portion of our study attempting to determine properties of effective digital library services and practices. This is requiring us to carefully reexamine our focus group protocol.

The participants are having interesting discussions that raise questions such as: when in the teaching cycle are they searching for materials? What kinds of materials (formats and levels of granularity) would they like to find? Under what circumstances are they using the materials? How do they envision peers participating as a community in surrounding digital libraries? And, how important is peer review of the educational resources found in digital libraries?

We are beginning to see patterns of faculty motivation for use of the web in instruction and the criteria they use to sharpen their search strategies, evaluate resources, and revisit what they consider to be good. While not surprising, there are differences in resource use between the participants who primarily use online materials and those who both create and use resources. Finally, time is commonly marked as a major factor that limits adoption of digital library resources, and we are just beginning to get a picture of the complexity that is reflected in the simple statement, “I don’t have time.”

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Annotated Research Findings of Interest to DL Researchers

Brody, P., M. Markland and C. Jones. (2003). Linker: Linking Digital Libraries and Virtual Learning Environments: Evaluation and Review. Final Report: Formative Evaluation of the DiVLE Programme. CERLIM, http://www.jisc.ac.uk/uploaded_documents/Linker-d5-MASTER.doc

A report from JISC projects looking at integration of course management systems and the library. They also found that Google was the primary stop for faculty and even when they integrated links to digital libraries into the course management system while faculty had high awareness of the resource only 30% used it in their teaching.

Manduca, C., Iverson, E., Fox, S., McMartin, F., Influencing User Behavior Through Digital Library Design: An Example From the Geosciences, D-Lib May 2005. Available at <http://dlib.org/dlib/may05/fox/05fox.html>.

This study that monitors use of the starting point digital library. It discusses how the design of the library was influenced by user needs and preferences, and, in turn, that user centered design can impact the users’ teaching.

Morgan, G. (2003). Faculty Use of Course Management Systems Key Findings.

<http://www.educause.edu/ir/library/pdf/ERS0302/ckf0302.pdf>

Faculty Use of Course Management Systems is a key findings summary of how faculty members use course management systems for teaching. It includes discussions of methodology for investigating faculty

use of technology for teaching and factors that encourage and discourage adoption of new technology. The full study is available to Educause-ECAR member institutions.