Why and how do instructors use scholarly resources in preparing and conducting their courses?

Multi-Institutional User Research Findings
Library and Sakai 3 Integration Project
23 March 2010

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Summary

The Library and Sakai 3 Integration Project\(^1\) has completed interview and observation sessions with 25 instructors from ten different institutions. The main research question for this user research study was: *Why and how do instructors use scholarly resources while preparing and conducting their courses?*

The findings in this report are invaluable for the design of a Library-Sakai integrated product, but do not necessarily represent the attitudes and behaviors of all faculty because faculty are so numerous and diverse.

Key Findings

The following findings are detailed throughout the remainder of this report.

- Most interviewees define scholarly resources traditionally, but the resources they use in their courses vary widely based on the context and can include a great deal of non-scholarly content.
- In their roles as instructors, interviewees are largely driven by wanting to facilitate the growth of their students through increased interaction as well as by sharing their passion for their discipline with others. This results in a desire to use debatable and engaging resources in their courses.
- Interviewees most commonly mentioned using scholarly resources for assignments (readings and for use in projects, papers or exercises) as well as for integrating excerpts from and references to scholarly resources into lectures (through slides or handouts).
- Interviewees' processes for finding resources for class are varied, but interviewees tend to start preparing the resources for their courses from material they have already gathered or known works they are very familiar with.
- Interviewees are having difficulty finding, managing and sharing resources they want to use in class because the sources are varied, interfaces do not provide enough information up front and personal resource management techniques can be laborious and violate copyright law.

Next Steps

The following next steps are detailed at the end of this report.

- Move forward with personas & workflow diagrams.
- Discuss a general design direction.
- Learn more about the Sakai 3 design and development process.
- Reach out to other potential stakeholders.
- Present at the June Sakai conference.

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\(^1\) [http://confluence.sakaiproject.org//x/PwCX](http://confluence.sakaiproject.org//x/PwCX)
Context

The Sakai Collaboration and Learning Environment (CLE) is a community source enterprise application in use at 200 institutions worldwide. With functionality to support coursework, collaboration, and portfolios, Sakai is a leader in exploring and developing ability for users to interact with library resources from within course web sites. The design process is currently underway for the next major evolution of Sakai, to be known as Sakai 3. The vision for Sakai 3 includes more emphasis on the user experience, social networking features, improved teaching and learning workflows, and powerful content authoring capabilities. While Sakai 2 contains functionality within the Resources tool to allow users to search for and link to library resources, these features only begin to touch on the potential for users to interact with library resources more meaningfully and in a wider variety of ways from within a course site. Sakai 3 gives the Library-Sakai community an opportunity to reconsider user needs for using library content within Sakai. To better understand user needs for interacting with library resources, the Library-Sakai community has conducted a multi-institutional user study to examine how instructors access and use content, specifically scholarly resources, to support their teaching. This report describes this study and makes recommendations for next steps.

2 http://sakaiproject.org/new-sakai-faq
3 http://sakaiproject.org/future-directions
Interview Study Goals

Library and Sakai integration is a complex problem involving a multitude of user groups that interact with many different systems, people and policies. Creating a generalizable solution to be deployed at a variety of institutions adds another layer of complexity.

The goals of this interview study were to:

- break down this large problem into more manageable chunks,
- focus on addressing actual needs of real users, and
- collaborate with a wide range of institutions from the Sakai community.

Defining the research question

The overarching research question for this user study was: Why and how do instructors use scholarly resources while preparing and conducting their courses? Based on common themes amongst four preliminary user interviews conducted with faculty at the University of Michigan and eight stakeholder interviews conducted with library managers and technologists at different institutions, we realized we could not focus on any specific scholarly resources task that instructors performed because they are so varied. At the same time, we needed to narrow our focus to make sure we were uncovering meaningful data. We decided that preparing and conducting courses were key activities involving scholarly resources that we would focus on supporting. These activities were broad enough for us to understand the right scope of instructor needs.

Defining the target interview audience

Though library and Sakai integration affects students, librarians, instructional designers and others at institutions, we decided to focus on instructors and their course activities. Instructors play a primary role in collecting scholarly resources, including them in a variety of course activities and disseminating them through Sakai or some other means. Focusing on one user group instead of many also allowed our group to gain a stronger understanding of instructors and reduced the complexity of our first attempt at a distributed user study across multiple institutions with a range of expertise in user-centered design practices.

The broad term of instructors was further split into three groups:

- Faculty - professors and lecturers that directly prepare and conduct courses.
- Graduate Student Instructors - teaching assistants and graduate students that assist in preparing and conducting a course.
- Instructor Assistants - departmental staff or faculty assistants that assist in preparing and conducting a course.
Participants

A total of 25 interviews were completed consisting of 20 Faculty, three Graduate Student Instructors and two Instructor Assistants (see Chart 1). We have representation of interviewees across disciplines (see Chart 2) from ten different institutions (see Table 1). Although Graduate Student Instructors and Instructor Assistants work to prepare and conduct courses, it seems safe to assume that Faculty are the main decision makers and are doing a majority of the work in most cases. As we continue with the design process, we may choose to design a system focused on Faculty or choose to consider user groups such as students, librarians and instructional designers at some level depending on time and other resources we have available.

Though we have 20 Faculty interviews to draw from, the diversity of disciplines, roles, teaching contexts and other factors of all faculty instructors makes it difficult to provide statistically significant claims that represent all faculty. The data does, however, reveal a great deal of information about themes and patterns common across a broad range of faculty. The findings in this report are invaluable for the design of a library-Sakai integrated product, but do not necessarily represent the attitudes and behaviors of all faculty.

![Chart 1. Types of Instructors interviewed (25 total)](chart1)

![Chart 2. Department area of instructors interviewed (25 total)](chart2)

<table>
<thead>
<tr>
<th>Institution</th>
<th>Number of Interviewees</th>
</tr>
</thead>
<tbody>
<tr>
<td>HEC Montréal</td>
<td>1</td>
</tr>
<tr>
<td>Indiana University</td>
<td>2</td>
</tr>
<tr>
<td>Mount Holyoke College</td>
<td>3</td>
</tr>
<tr>
<td>Naval Postgraduate School</td>
<td>4</td>
</tr>
<tr>
<td>Rice University</td>
<td>2</td>
</tr>
<tr>
<td>Stanford University</td>
<td>3</td>
</tr>
<tr>
<td>Universidad Nacional De Rosario</td>
<td>2</td>
</tr>
<tr>
<td>University of California, Berkeley</td>
<td>3</td>
</tr>
<tr>
<td>University of Michigan</td>
<td>4</td>
</tr>
<tr>
<td>Yale University</td>
<td>1</td>
</tr>
</tbody>
</table>

Other: Education, Space Systems/Information Sciences, Operations Research and Graduate Student Training
Interview Process

Our Interview Protocol was used to outline the procedure and methods for conducting user interviews. The Interview Protocol consisted of:

- Confidentiality and Consent Forms to protect the privacy of our interviewees.
- Interview Script consisting of the questions and topics to cover during an interview (included in Appendix A).
- Best practices for note-taking during interviews.
- Best practices for debriefing after an interview.

Conducting interviews

Interview teams of at least two people (one interviewer, one note-taker) met with interviewees at their usual place of work to ask questions and observe while interviewees performed certain activities for one to 1.5 hours. At some institutions, incentives such as gift certificates were offered to interviewees for their time.

The Interview Script (included in Appendix A) included a series of questions and an observation section that focused on the following topics based on Cooper’s goal-directed design methodology and governed by our overarching research question: Why and how do instructors use scholarly resources while preparing and conducting their courses?

- Variables - Understanding demographic and behavioral variables such as the instructor’s department and experience teaching.
- Mental Models – How does the instructor think about scholarly resources, their work, and services and systems they use?
- Activities – What kinds of activities does the instructor perform? Do they occur regularly or occasionally?
- Workflow - For various activities and tasks, what are the starting and end points, what specific steps are taken in between, systems used, information required, criteria used, decisions considered, problems encountered or workarounds developed?
- Motivation – What are the instructor’s goals? What does the instructor enjoy doing?
- Interactions – Who or what does the instructor consult or work with?
- Opportunities – What are the instructor’s problems and frustrations? What do they avoid doing?
Findings

Why and how do instructors use scholarly resources while preparing and conducting their courses?

Interviewees define and use scholarly resources in a variety of different ways, but there are definite patterns that have emerged from this study. Interviewees are using scholarly and non-scholarly resources for various assignments and in their lectures not only to meet curricular goals, but also to increase interaction with their students and ultimately see them grow. They are using an increasing amount of non-scholarly content in courses with a particular focus on videos and images to engage their audiences.

Interviewees tend to start preparing the resources for their courses from material they have already gathered or known works they are very familiar with. In an effort to increase interaction amongst their students, they select new resources based on how current and applicable they are and whether or not they will raise some debate. They have some difficulty in finding the full-text digital content they are looking for, managing it in a safe way and sharing it in as few steps as possible.

Our findings are further discussed in the following sections:

• **Scholarly Resources**: how do interviewees define and use scholarly resources?
• **Motivations and Goals**: what drives interviewees as instructors and in selecting resources for class?
• **Activities and Workflow**: what major activities are interviewees performing and what is the process for getting resources into the course?
• **Problems and Frustrations**: what major problems and frustrations do interviewees have in dealing with scholarly resources?
• **Interactions**: how are interviewees interacting with the library and other instructors?
**Scholarly Resources**

Most interviewees define scholarly resources traditionally, but the resources they use in their courses vary widely based on the context and can include a great deal of non-scholarly content.

**Definition**

We identified three major ways in which interviewees defined scholarly resources:

1. **Traditional** - Most interviewees defined scholarly resources traditionally, revolving around peer-reviewed academic work and content published in journals, conference proceedings and trade reports.

   "I consider scholarly work ... anything published in proceedings, journals, conferences, peer reviewed."

   Michigan04

2. **Everything** - A number of interviewees did not make a distinction between scholarly and non-scholarly resources, considering anything and everything as potentially useful for their course. A few interviewees expressed that the scholarly label was artificial and maybe even arrogant.

   “A scholarly resource for me is anything that helps me facilitate the transmission of knowledge to students. It doesn’t have to be library material. Links, volumes, articles, video, … even a person could be a scholarly resource.”

   HECMontreal01

3. **Hybrid** - A few interviewees defined scholarly resources based on the context. In certain situations (i.e. a graduate course) scholarly resources meant peer-reviewed content. In other situations (i.e. introductory undergraduate course) scholarly resources meant popular news and magazine articles, images, videos, etc.

**Usage**

Though the frequency of definitions from most common to least common follows the order of Traditional, Everything, Hybrid, the frequency of usage follows the order of Hybrid, Traditional, Everything. A majority of interviewees are using a mix of scholarly and non-scholarly resources based on the context. Commonly mentioned non-scholarly resources included popular news and magazine articles to provide relevancy and applicability to course concepts and YouTube videos and images from various sources to represent ideas in more engaging ways.

For some interviewees, popular resources such as images are central to their discipline. For example, both Art History and Fashion faculty were interviewed and their courses revolve around images.

While there was no clear pattern based on discipline, the distinguishing factor for who used scholarly material exclusively seemed to be those teaching courses that required more quantitative evidence rather than opinions. This was not limited to disciplines like Medicine and physical science, but included some of the humanities. Comfort level with searching online for scholarly material was directly proportional to use of traditionally defined scholarly resources. Those under 40 years old were more likely to incorporate hybrid resources into their curriculum.
Motivations and Goals

In their roles as instructors, interviewees are largely driven by wanting to facilitate the growth of their students through increased interaction as well as by sharing their passion for their discipline with others. This results in a desire to use debatable and engaging resources in their courses.

Encouraging Student Growth Through Interaction

Many interviewees indicated the importance of playing a role in the growth of their students. Accomplishing this highly related to ongoing one-on-one communication with students and obtaining reliable feedback on various student activities. Almost all interviewees (21 out of 25) cited interacting with students as the most enjoyable part of their jobs as instructors. Rewarding activities repeated across interviewees included: fielding intelligent questions, working with students one-on-one and seeing students’ “light bulbs” go off. A desire to see students grow from the start of the semester to the end was expressed in a number of ways.

“If students grow, I love that. If they don’t, that troubles me. “
Berkeley02

When selecting resources for class, many interviewees demonstrated they seek out content that will increase interaction amongst students. They look for relevant, applicable material that may provoke a debate or by employing engaging multimedia such as videos and images.

Sharing Their Passion and Continuing to Learn

Alongside interacting with students is a desire for interviewees to share their enthusiasm for their subject area and continue their own learning process. A few interviewees explicitly stated sharing their passion as the most enjoyable part of their jobs as instructors while this sentiment could easily be observed from comments made by many other interviewees. As might be expected, interviewees are fascinated by what they study and teach. Interacting with students as well as colleagues allows interviewees to see current events and fundamentals in their subject area in a new and interesting light, and to continue learning themselves.

«It’s energizing to see how students respond to fascinating stuff.»
Yale01

His favorite thing about being an instructor is teaching undergraduate students because it forces him to go back and feel surprised and amazed by things just as he did when he learned them for the first time.
Indiana01 Interviewers

When selecting resources for class, many interviewees are looking for current, applicable content that will shed new light on a topic. Many times, this content is in the form of articles from current popular newspapers and magazines or YouTube videos. In most cases, interviewees will seek out this content at the start of each new course and use it for discussion in class or share it as supplemental to more standard course textbooks or required journal article readings.
Activities and Workflow

Activities
Interviewees use scholarly resources for a number of different course-related activities. Interviewees most commonly mentioned using scholarly resources for assignments, both as readings and for use in a project, paper or exercise. Another common activity was integrating excerpts from and references to scholarly resources into lectures, either through slides or handouts.

Workflow
The diagram on the following page represents the general workflow of interviewees in finding resources for their courses. Notably, many interviewees started by reviewing resources they had used for a previous course. Another popular option was starting with a scholar or resource that the instructor was already familiar with, either to use directly or as a jumping off point to related works via referenced citations. Finally, when looking for brand new resources, interviewees rely on keyword searches of their favorite online databases. A subset of interviewees did not have a standard start point, and instead serendipitously happened upon resources during the course of their daily activities. The majority of interviewees distribute resources to their students via Sakai or an alternative learning management system, most commonly to the Resources section of the site.

She said 'I don’t use anything I should’... instead she trusts the footnotes and bibliographies of the works she reads and finds sources that way or uses things she already found in the past.
MountHolyoke02 Interviewers

“It’s not like I have time to set aside a week to look for things, so it’s often serendipitous as things come across my desk.”
Berkeley01
What steps do instructors take to find resources for their courses?
Problems and Frustrations

Interviewees are having difficulty finding, managing and sharing resources they want to use in class.

It is not always easy to find resources in the formats that interviewees are looking for online. For journal articles, most interviewees are searching almost exclusively for full-text PDFs online because they are so easy to save and share. During observation, a few interviewees would find a promising journal article but give up on it entirely because the full-text PDF was not available. One interviewee in the history field sought out original PDFs not for their convenience but because the original representation of an article offered a great deal of historical information in itself. Many instructors complained of too many clicks to get to full text. They mentioned it would be nice to know as soon as possible whether full text was available online for an article.

"I'm always severely disappointed when it takes me to the point where I need to get a paper copy."

Berkeley03

Once materials are found, interviewees are forced to create their own systems for managing them. A few interviewees mentioned using citation management software and many are using simpler, less reliable methods such as saving browser bookmarks, creating lists in Word documents or saving PDFs on their computers. This last method in particular involves copyright infringement risks.

Finally, it is challenging for interviewees to share scholarly resources with others. In some interviews observed, there are large shared repositories of PDF articles for use by entire departments that are in violation of copyright.

"The most shocking thing for me was seeing the Sakai screen that had about 30 PDF's posted, with no library branding, nothing about the library - library is out of the loop."

Rice01

Interviewers There are usually a number of steps between finding a resource and making it visible to students, some of them problematic and some of them unnecessary. Problems stem from copyright and permissions issues. Steps that are unnecessary include saving documents and links in «holding places» only to transfer them elsewhere.
**Interactions**

**With The Library**

Though the level of engagement and awareness differ, all interviewees work with the library. Interactions with the library include working with a librarian to prepare a class, getting assistance from a librarian to find scholarly resources, having a library workshop, directing students to the library for research, and asking a librarian to set up an online research guide for their class or using a previously created research guide.

Some interviewees actively engage with the physical library and librarians, while others are not entirely aware of services provided by the library. Those who actively work with librarians seek help to find necessary resources and shape their course. They also hold librarian-lead instruction sessions to help students research with library resources. Librarians remain available for consultation throughout the semester.

“I make my students make an appointment with a librarian, but I’d like to be able to integrate it sooner and more gracefully.”

Berkeley01

**With Other Instructors**

Almost all interviewees share resources with other instructors in varying ways. Some interviewees prepare and teach courses by themselves while others co-teach. Almost all interviewees, however, are very open to sharing ideas about their course with others. Some interviewees have access to other instructors’ Resources through Sakai. Some mentioned consulting instructors that have previously taught their course or similar courses at other universities and others cited following leaders in the field, attending their talks at conferences looking for new course material.
Next Steps

1. **Move forward with personas.** While more user data and research is helpful, we recommend not spending more time on researching users because the domain is so broad. Statistically significant data would be very time consuming to gather. Continuing with personas would allow us to delve deeper into the data we have while looking at it from a different perspective. After creating about 4 instructor personas and low-fidelity prototypes, we will have the opportunity for more end user involvement. At that time, we can get feedback from a wider set of instructors as well as students and librarians.

2. **Move forward with workflows.** The largest gaps in data are in the activities and workflow area. We need more details on how instructors are storing and organizing their resources and eventually sharing resources with their students. We may be able to reach out to interviewees for more feedback in this area. We can also reference other studies in a similar space such as the recent discovery system personas created at Johns Hopkins University Libraries[^4], and the University of Rochester ethnographic studies[^5].

3. **Discuss a general design direction.** A general design direction emerging from this research is a system to make it easier for instructors to find, manage and share resources (scholarly and non-scholarly) they are finding anywhere out on the web. This direction lines up with recommendations from the stakeholder interviews for a “library bookmarklet”. The goal would be to build a technical infrastructure to support importing content out on the web into Sakai 3 instead of a standalone application.

4. **Learn more about the Sakai 3 design and development process.** Sakai 3 design and development has been progressing. It will be important for our design team to get up-to-speed from a technical and user perspective to arrive at realistic designs.

5. **Reach out to other potential stakeholders.** There are others within the Sakai community that may be very interested in the findings of this report and that we may be able to learn from as we continue with the design process.

6. **Present.** Present preliminary designs at the June Sakai conference.

[^4]: https://wiki.library.jhu.edu/display/WRTG/User+needs+and+site+objectives
[^5]: http://docushare.lib.rochester.edu/docushare/dsweb/View/Collection-2795