Evaluating Faculty and Student Use of Digital Resources for Teaching and Learning

Presenters: Flora McMartin, Broad-based Knowledge, flora.mcmartin@gmail.com
Glenda Morgan, University of Illinois Urbana, gmorgan@illinois.edu
Josh Morrill, Morrill Solutions Research (MSR), joshua@morrillsolutions.com
Ellen Iverson, Carleton College, eiverson@carleton.edu
Kristin O’Connell, Carleton College, koconnell@carleton.edu

American Evaluation Association Annual Meeting, Minneapolis, Oct 2012
Copyright, creative Commons Attribution Req'd
WHY STUDY DIGITAL RESOURCES?

• How people interact with scholarly content is changing

• Roots in NSDL and other digital library initiatives

• People had only studied how faculty used specific collections or how students did research papers

• No one knew how faculty or students found & used materials
Each evolution of our original study opened us up to new techniques and new potential for the data and data collection.
Starting With Focus Groups

Faculty (2006)

What did we know? ---Not much.

RQ1 - How do faculty use online materials in teaching?
RQ2 - How do materials align w/ faculty work patterns?
RQ3 - What makes online materials useful for teaching?

Students (2011)

What did we know? ---A little.

RQ1 - How do students use digital learning resources?
RQ2 - Why do students use these resources?
RQ3 - What is the impact of this use on students’ learning?
RQ4 - What are the barriers to their use?
Focus Group Findings

Faculty (2006)

- Digital Resources over 'Learning Objects'
- Personal definitions of digital libraries (DLs) varied widely
  - Personal web-pages, curated collections, browsers
- Very few people knew about NSDL (or other DLs)
- Barriers to use
  - Google
  - Information overload
  - Concern about copyright and use
  - Not invented here
Focus Group Findings

Students (2011)

• Very information literate (savvy)
• Used Web as supplement to class materials (text books still very important)
• Social networking important, but most worked alone
• Iterative use of Wikipedia - Google - friends - textbooks
• Advice
• Students are over surveyed
How Focus Groups Informed Our Surveys

Faculty (2006)
- Language – **Digital Resource**
- Barriers

Students (2011)
- Demographics
- Study/learning habits affect choice/use
- Reach to ALL students

Both directly informed the survey process that emerged from the focus groups.
SURVEYS

Faculty Use of Digital Resources

Student Use of Digital Resources
Survey Administration

Faculty (2006)

Large Sample Attained  N=4,479
BUT administration relied on complex, high-touch, messy administration. Campuses were the (sometimes reluctant) go-betweens.

Students (2011)

Large Sample Attained  N=1,749
Went more directly to students. Nice variation in sample. Used Marketing vendor for sample. MUCH EASIER!
Student Sample Lemonade

Sample Vendor
(Survey Monkey Audience)

We do not have a variable to select students. From our panel
We do not have a variable to select students. From our panel OK - select on a limited age range (18-30) and we will ask in the survey if they are past/current/never been students.

We now have 3 useful groups to compare:
- Current students (full time part time, etc.)
- Past students / Alumni
- Never students/ Never went to college
Survey Findings ("6-Word Mottos")

Faculty (2006)

“Many chefs make lots of soup!”

Lots of data, lots of comparisons. Experienced a bit of “paralysis by analysis” Some of the most interesting relationships were the most complex to explain.

Students (2011)

“Develop frameworks to understand the results”

Limited, shorter survey. Borrowed market research techniques/ analysis to help make findings more useable/approachable.
Early Student Findings...

**Ambivalent Learners**
48% of Sample
This segment addresses learning problems using a plan (at least they believe that they have a plan). But, mostly, they do not feel strongly about their learning. They are confident in their ability to find information, but do not enjoy studying nor do they have a need to learn. This is the largest learner segment from the sample.

**Adaptive Learners**
26% of Sample
This segment exhibits a lot of characteristics of "ideal" learners (They solve problems with a plan, they are systematic, they set goals, they ask for help if they experience a problem, they enjoy studying and have a need to learn). A differentiator in this group is that there is more variance around setting specific times to study. For example, this could be a learner who studies in a hallway whenever they had some free time.

**Free Form Learners**
13% of Sample
This group is not systematic in their learning, and do not solve problems with plans. But they are willing to change what they do when presented with new information (may speak to an experiential type of learner). This group also feels like they have a need to learn, but are among the least likely to set aside specific time to study.

**Time Sensitive Learners**
11% of Sample
This segment is similar to the adaptive learners in many ways (use a plan, are systematic, etc), but they are just not quite as strong in these skills. Directionally they are identical to adaptive learners. The other key difference is that this group is the most likely to set specific times to study, and least likely to ask for assistance with a problem. This is also the smallest learner segment.
LINKING INTERVIEWS WITH SURVEY METHODS
Using Interviews with Surveys

All STEM faculty

Focus groups → Survey

Social Science faculty

Survey → Interviews

Geoscience faculty

Survey → Web analytics and interviews
Social Science Faculty Study Design

Survey
• Use digital resources
• Assess quantitative literacy

Qualitative Study
• Approach teaching
• Identify potential website users
Social Science Faculty Study Design

Survey
• Administered in 2010
• Sent to 3280 faculty (stratified sample*)
• 1037 responses (32% response rate)

Qualitative Study
• Interviewed 27 survey respondents in Fall 2011
• Interviewed additional two-year and economics faculty (5 participants in Spring 2012)
Social Science Interview Study

- Detect differences between faculty at different institutional types
- Learn more about the teaching practices of instructors at different institutions
- Understand more specifically how faculty used digital resources to support their teaching
Making sense of survey data

**Survey:**
- Reducing student anxiety with using quantitative data *not important* for setting goals for course

**Interviews:**
- Student anxiety with quantitative data was *major* challenge
## ID target audience

<table>
<thead>
<tr>
<th>ID</th>
<th>#11 et. al., Use</th>
<th>#35, Motivation</th>
<th>#37 &amp; #38, heard of &amp;/or used ICPSR, SSDAN</th>
<th>Part of the target audience?</th>
<th>#3, Years teaching</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sociology, Methods</td>
<td>high user</td>
<td>high motivation</td>
<td>heard of ICPSR, used ICPSR</td>
<td>target audience</td>
<td>5</td>
</tr>
<tr>
<td>Political Sci., Methods</td>
<td>high user</td>
<td>high motivation</td>
<td>heard of ICPSR, used ICPSR</td>
<td>target audience</td>
<td>25</td>
</tr>
<tr>
<td>Economics</td>
<td>high user</td>
<td>moderate motivation</td>
<td>heard of both, not used either</td>
<td>target audience</td>
<td>18</td>
</tr>
<tr>
<td>2YC Sociology</td>
<td>high user</td>
<td>moderate motivation</td>
<td>not heard of either, not used either</td>
<td>target audience</td>
<td>9</td>
</tr>
<tr>
<td>2YC Human Serv.</td>
<td>high user</td>
<td>moderate motivation</td>
<td>not heard of either, not used either</td>
<td>target audience</td>
<td>15</td>
</tr>
<tr>
<td>Sociology, Methods</td>
<td>moderate user</td>
<td>high motivation</td>
<td>heard of both, used both</td>
<td>not a target</td>
<td>37</td>
</tr>
</tbody>
</table>
Persona 1: 2YC Instructor (non-methods/econ)

- Teach quantitative skills at a basic level
  - Know about percentages
  - Be able to interpret a graph
- For graduation: basic quantitative skills
- Pedagogy: Small group activities that engage
- Looking for short activities on an ideal website
Persona 2: Instructor at a four-year institution (non-methods/econ)

• Teach quantitative skills at an advanced level
  • Statistical tests
  • Data analysis
• For graduation: advanced quantitative skills
• Pedagogy: Lecture and deliver content easily
• Looking for relevant short video clips, blog posts, to add in to their lectures on an ideal website
3rd mixed method approaches

All STEM faculty
- Focus groups
- Survey

Social Science faculty
- Survey
- Interviews

Geoscience faculty
- Survey
- Web analytics and interviews
Case Studies

1. Six months of website use analyzed

Web Log Excerpt for a Single Deep Session

- 11:54:00 GET/resources/2304.html
- 11:54:01 GET/resources/23072.html
- 11:54:03 GET/NAGTWorkshops/
- 11:54:03 GET/NAGTWorkshops/index.html
- 11:54:13 GET/NAGTWorkshops/careerprep/index.html

Corresponding narrative

- “This is a visit to the career collection that begins with a search to a structural geology handout . . .”
Case Studies

2. National survey responses to teaching approaches and publishing history
3. Analysis of previous interview responses
4. New telephone protocol linking website use to six months of teaching
Next steps

• Classroom observation using Reformed Teaching Observation Protocol
• Collection and analysis of syllabi and assignment prompts
• Student assessment using Geoscience Literacy Exam (GLE)
Thanks to the National Science Foundation for Support

• NSF DUE award no. 1049537 & 1049531