How Students Use and Learn from Digital Resources

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Why study anyone’s use of digital resources?

• “If you build it they will come”

• Assumptions about students and their use of technology

• Assumptions about how people find things

• Growing role & promise of Open Educational Resources
Faculty Baseline: Faculty use of Digital Resources (2006)

Faculty Studies in Context: Physics, Social Science, Geoscience (2008-2011)

General Student Baseline (2012)

A STUDY BEGINS ... A STUDY EVOLVES
SAMPLING

Faculty Use of Digital Resources

Student Use of Digital Resources
### Community College Attendance Among Recent Recipients of Science, Engineering & Health BS & MS Degrees 2006 & 2007

<table>
<thead>
<tr>
<th>Degree Level</th>
<th>Degree Recipients (No.)</th>
<th>Ever Attended Community College (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Graduates</td>
<td>1,437,000</td>
<td>50.3</td>
</tr>
<tr>
<td>Bachelors</td>
<td>1,128,000</td>
<td>52.2</td>
</tr>
<tr>
<td>Masters</td>
<td>309,000</td>
<td>43.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Degree Recipients (No.)</th>
<th>Ever Attended Community College (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Graduates</td>
<td>1,437,000</td>
<td>50.3</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>818,000</td>
<td>54.7</td>
</tr>
<tr>
<td>Male</td>
<td>619,000</td>
<td>44.4</td>
</tr>
<tr>
<td><strong>Ethnicity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>American Indian/Native Am</td>
<td>3,000</td>
<td>71.8</td>
</tr>
<tr>
<td>Asian</td>
<td>217,000</td>
<td>44.3</td>
</tr>
<tr>
<td>Black</td>
<td>98,000</td>
<td>54.8</td>
</tr>
<tr>
<td>Hispanic</td>
<td>117,000</td>
<td>56.1</td>
</tr>
<tr>
<td>White</td>
<td>931,000</td>
<td>50.1</td>
</tr>
<tr>
<td>Other</td>
<td>70,000</td>
<td>53.3</td>
</tr>
</tbody>
</table>
FOCUS GROUPS

Faculty Use of Digital Resources

Student Use of Digital Resources
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

Students (2011-2012)

- 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
Survey Administration

**Serendipity**: We now have 3 useful groups to compare:

1. Current students (*full time part time, etc.*)
2. Past students / Alumni
3. Never students/ Never went to college.
Information Seeking Behavior Survey

- Seek out faculty and TAs
- Seek out friends
- Seek out a tutor or the learning center
- Post question on an Internet message board
- Text or IM friends
- Email experts not at your institution
- Consult textbooks
Information Seeking Behavior Survey

- Ask a librarian
- Consult supplemental readings
- View an online lecture
- Review relevant Wikipedia entries
- Review results from a Google search
- Use online library resources (e.g. online journals, e-reserves, or subject guides)
Some demographics…
Age (n=1711)

- 18-19: 22%
- 20-21: 19%
- 22-23: 18%
- 24-25: 17%
- 26+: 25%

Percent
Student status (n=1740)

- Full time college/university student: 53%
- Part-time college/university student: 9%
- Former college/university student: 31%
- Never a college/university student: 8%
Employment (n=1043)

- Not working: 41%
- Part-time: 69%
- Full-time: 9%
And some findings...
Most frequently taken course modalities

<table>
<thead>
<tr>
<th>Course Modality</th>
<th>Percent</th>
<th>STEM (n=346)</th>
<th>Non-STEM (n=656)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entirely F2F</td>
<td>47</td>
<td>44</td>
<td></td>
</tr>
<tr>
<td>Minimal</td>
<td>37</td>
<td>35</td>
<td></td>
</tr>
<tr>
<td>Equal mix</td>
<td>10</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>Extensive Web</td>
<td>3</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Entirely online</td>
<td>2</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>
Preferred class modalities

- STEM (n=346)
- Non-STEM (n=654)

*Entirely F2F*
*Minimal Web*
*Equal mix*
*Extensive Web*
*Entirely online*
Technologies used in class

- **Video/audio**: 74% (STEM) vs 77% (Non-STEM)
- **Wikis/blogs**: 21% (STEM) vs 27% (Non-STEM)
- **E-books**: 42% (STEM) vs 42% (Non-STEM)
- **Sims/Animations**: 35% (STEM) vs 19% (Non-STEM)
- **Mobile apps**: <5% (STEM) vs <5% (Non-STEM)
- **External websites**: 61% (STEM) vs 65% (Non-STEM)
- **Social networks**: 18% (STEM) vs 21% (Non-STEM)
- **Online library resources**: 66% (STEM) vs 74% (Non-STEM)
Technologies preferred frequently used in class

<table>
<thead>
<tr>
<th>Technology</th>
<th>STEM (n=346)</th>
<th>Non-STEM (n=649)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Video/audio</td>
<td>33</td>
<td>37</td>
</tr>
<tr>
<td>Wikis/blogs</td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td>E-books</td>
<td>23</td>
<td>25</td>
</tr>
<tr>
<td>Sims/Animations</td>
<td>31</td>
<td>24</td>
</tr>
<tr>
<td>Mobile apps</td>
<td>12</td>
<td>14</td>
</tr>
<tr>
<td>External websites</td>
<td>27</td>
<td>32</td>
</tr>
<tr>
<td>Social networking</td>
<td>10</td>
<td>14</td>
</tr>
</tbody>
</table>
Student information seeking behavior: Class vs. Interest

Means

- Textbook
- Google
- Friend
- Faculty
- Online Lib
- Wikipedia
- Readings
- Text/IM
- Lecture
- Tutor cent.
- Msg board
- Librarian
- Expert

Interest
Class
Community college students compared to other student populations

<table>
<thead>
<tr>
<th>How you concerned are you about your ability to finance your college education?</th>
<th>A two-year or community college</th>
<th>A four-year college or university</th>
<th>A trade or technical school</th>
<th>A comp. or research university</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extremely concerned</td>
<td>45.8%</td>
<td>29.6%</td>
<td>33.3%</td>
<td>23.7%</td>
</tr>
<tr>
<td>Very concerned</td>
<td>26.1%</td>
<td>22.2%</td>
<td>0.0%</td>
<td>19.1%</td>
</tr>
<tr>
<td>Somewhat concerned</td>
<td>19.7%</td>
<td>24.4%</td>
<td>33.3%</td>
<td>24.3%</td>
</tr>
<tr>
<td>A little concerned</td>
<td>4.9%</td>
<td>12.9%</td>
<td>16.7%</td>
<td>13.9%</td>
</tr>
<tr>
<td>Not concerned at all</td>
<td>3.5%</td>
<td>10.9%</td>
<td>16.7%</td>
<td>19.1%</td>
</tr>
</tbody>
</table>
PERSONAS

Survey

Student Use of Digital Resources
Student Personas

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.
## Persona Demographics

<table>
<thead>
<tr>
<th></th>
<th>Ambivalent Learners</th>
<th>Adaptive Learners</th>
<th>Free Form Learners</th>
<th>Time Sensitive Learners</th>
</tr>
</thead>
<tbody>
<tr>
<td>% full time student</td>
<td>54%</td>
<td>55%</td>
<td>39%</td>
<td>47%</td>
</tr>
<tr>
<td>% former students</td>
<td>30%</td>
<td>33%</td>
<td>44%</td>
<td>33%</td>
</tr>
<tr>
<td>School/ Institution</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 year/ community college</td>
<td>13%</td>
<td>15%</td>
<td>21%</td>
<td>28%</td>
</tr>
<tr>
<td>4 year college/ university</td>
<td>72%</td>
<td>57%</td>
<td>51%</td>
<td>55%</td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% White/ Caucasian</td>
<td>74%</td>
<td>75%</td>
<td>73%</td>
<td>48%</td>
</tr>
<tr>
<td>Is / Was Major</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Business, Marketing</td>
<td>17%</td>
<td>14%</td>
<td>17%</td>
<td>25%</td>
</tr>
<tr>
<td>Humanities &amp; Fine Arts</td>
<td>8%</td>
<td>11%</td>
<td>20%</td>
<td>8%</td>
</tr>
<tr>
<td>Engineering</td>
<td>10%</td>
<td>13%</td>
<td>7%</td>
<td>10%</td>
</tr>
</tbody>
</table>
**Personas And Blended Learning**

% within each persona desiring... *All face-to-face, half-and-half, or all online courses*

- **Time Sensitive**
  - Entirely Face-to-face: 60%
  - An equal mix (Online and face-to-face): 29%
  - Entirely Online: 11%

- **Free Form**
  - Entirely Face-to-face: 41%
  - An equal mix (Online and face-to-face): 21%
  - Entirely Online: 0%

- **Adaptive**
  - Entirely Face-to-face: 39%
  - An equal mix (Online and face-to-face): 14%
  - Entirely Online: 5%

- **Ambivalent**
  - Entirely Face-to-face: 39%
  - An equal mix (Online and face-to-face): 22%
  - Entirely Online: 5%
# Personas And Technology

<table>
<thead>
<tr>
<th>Technology Preferences</th>
<th>Ambivalent Learners</th>
<th>Adaptive Learners</th>
<th>Free Form Learners</th>
<th>Time Sensitive Learners</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Wikipedia</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% using Wikipedia (for school or work)</td>
<td>56%</td>
<td>57%</td>
<td>62%</td>
<td>47%</td>
</tr>
<tr>
<td><strong>Technology Preferences</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% wanting FREQUENT wiki or blog use in their classes</td>
<td>10%</td>
<td>13%</td>
<td>21%</td>
<td>26%</td>
</tr>
<tr>
<td>% wanting FREQUENT e-book or eText use in their classes</td>
<td>23%</td>
<td>40%</td>
<td>34%</td>
<td>45%</td>
</tr>
<tr>
<td>% wanting FREQUENT content from websites outside of campus used in their classes</td>
<td>24%</td>
<td>48%</td>
<td>53%</td>
<td>45%</td>
</tr>
<tr>
<td>% wanting FREQUENT social media (Facebook, Twitter, etc.) use in their classes</td>
<td>10%</td>
<td>18%</td>
<td>11%</td>
<td>32%</td>
</tr>
</tbody>
</table>
## Personas, Support and Searching

<table>
<thead>
<tr>
<th>Class Difficulties</th>
<th>Ambivalent Learners</th>
<th>Adaptive Learners</th>
<th>Free Form Learners</th>
<th>Time Sensitive Learners</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Very Likely to ask FRIENDS for help</td>
<td>46%</td>
<td>59%</td>
<td>45%</td>
<td>65%</td>
</tr>
<tr>
<td>% Very Likely to seek out a TUTOR</td>
<td>14%</td>
<td>18%</td>
<td>18%</td>
<td>54%</td>
</tr>
<tr>
<td>% Very Likely to seek out a LIBRARIAN</td>
<td>5%</td>
<td>17%</td>
<td>11%</td>
<td>42%</td>
</tr>
</tbody>
</table>

| Resources/ Searching                                    |                     |                   |                    |                         |
| % STRONGLY AGREE;                                        |                     |                   |                    |                         |
| "I prefer sites where others have determined the reliability/accuracy of content" | 30%               | 47%               | 53%                | 78%                     |
| % STRONGLY AGREE;                                        |                     |                   |                    |                         |
| "I prefer searching for one large resource first when I do not know where to look" | 24%               | 50%               | 42%                | 68%                     |
## Personas And Factors

<table>
<thead>
<tr>
<th>LEARNING FACTORS</th>
<th>Ambivalent Learners</th>
<th>Adaptive Learners</th>
<th>Free Form Learners</th>
<th>Time Sensitive Learners</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agency</td>
<td>48.7</td>
<td>51.8</td>
<td>49.2</td>
<td>53.6</td>
</tr>
<tr>
<td>Preparedness</td>
<td>45.5</td>
<td>55.5</td>
<td>50.9</td>
<td>60.1</td>
</tr>
<tr>
<td>Organization</td>
<td>47.2</td>
<td>54.9</td>
<td>46.0</td>
<td>59.8</td>
</tr>
<tr>
<td>Engagement</td>
<td>46.5</td>
<td>53.4</td>
<td>51.8</td>
<td>58.6</td>
</tr>
</tbody>
</table>

We use the factors to explore the segments. Even our validated factors privilege time sensitive learners, and that may be OK. But, it is important to be mindful of how even objective measures can privilege one of these groups over another.
Where Do We Go Next?

• Follow-ups with the Ambivalent Learners
  • Who are they, ways that their ambivalence manifests itself etc
  • How can we help overcome the ambivalence

• Questions of all types of learners
  • More about the types of digital resources they use
  • The importance of brand
  • More on the importance of curation and personal geographies of learning
  • Use of resources in class and to help outside of class – what prompts it and how can we expand.
Implications of this Information

• We have a more nuanced view of the types of students we have
• Student preferences for technology use and course mode
• Expand our notion of digital fluency to include learning to learn
• Libraries
• Textbooks
• And that’s just the beginning….
Questions and Comments

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Or one of the other researchers on the project

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Patsy Moskal, University of Central Florida, patsy.moskal@ucf.edu
Alan Wolf, University of Wisconsin at Madison, alanwolf@wisc.edu
And you gotta dance with them that brung you

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