HOW GREEN IS YOUR COURSE?
THE BATTLE OF TEACHING VERSUS TREES

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Questions

- How are changes in technology, along with sensitivity to environmental issues, affecting the ways in which
  - Students are being encouraged to read
  - Students indicate they wish to read

- What are the forces driving educational decision-making?
How are Decisions about Pedagogy Made in the US?

- Awareness of larger societal issues/trends
  - Technology
  - Environmental considerations
- Cognitive/pedagogical issues
  - Assumptions that students are techno-savvy, visually oriented
- Financial considerations
  - Costs of running the institution
  - Attracting students (assume they want technology, they care about environmental issues)
Contexts Motivating Study: Part I

- **Societal issues/trends**
  - Shift towards reading more online (computer, Kindle, iPad)

- **Cognitive/pedagogical issues**
  - Growing literature on implications of reading onscreen and of multitasking for “deep thinking”
    - Nicholas Carr, *The Shallows: What the Internet is Doing to Our Brains*
    - *NY Times*, “Does the Brain Like Ebooks?”
  - No institutional discussion of educational ramifications of shift from hard copy to onscreen reading

- **Financial considerations**
  - California: replacing hard copy texts with ebooks
  - Students: e-versions cheaper than hard copies
Questions Universities are NOT Asking

- Do we read differently in hard copy than onscreen?
- What are the consequences on reading onscreen for short-term learning?
- What are the consequences of reading onscreen for long-term learning?
- Are we being driven to onscreen reading by market factors (rather than by pedagogical arguments)?
  - E.g., attract students, reduce cost
Contexts Motivating Study: Part II

- US Campus initiatives for students to read onscreen
  - E-reserves, Blackboard/Chalk/etc.
  - H1N1: in case university needs to close
  - Certifying courses as “green”: initiatives include
    - Send syllabus electronically (don’t distribute hard copies)
    - Assign e-books, not printed books
    - Use e-reserves, Blackboard rather than handouts
    - Have students submit all work electronically
    - If you let students submit work in hard copy, require doubled-sided printing, single spacing, and small margins
Research Questions

- Theoretical issues
  - Pedagogically and intellectually, what do we gain or lose by shifting from reading in hard copy to onscreen?

- Empirical issues
  - What are reading habits of university students?
  - How do university students assess reading in hard copy versus onscreen?

- Context
  - Cross-cultural mobile phone study of 18-24 year-old university students
  - Conclusion: students enjoyed contacting others but felt trapped by always being reachable/dependent on mobile phone
Study Design

- Online survey (SurveyMonkey) (c. 6 minutes)
- Undergraduate students at mid-sized private university in US
  - N=87
- Additional data to be gathered (Spring/Fall 2011)
  - US graduate student data
  - US faculty data
  - Cross-cultural student data
Key Questions:
Part I – Textbooks, Annotation; Part II- Medium Preference

- Course textbooks
  - Do you sell your textbooks at the end of the term?
  - Are you renting hard copies of textbooks this term?
  - Are you purchasing short-term electronic downloads of textbooks this term?
  - Are you purchasing-to-own electronic downloads of textbooks this term?
- Annotation habits (hard copy)
- Reading preferences by genre
  - Hard copy vs. onscreen
  - Academic work vs. pleasure
Key Questions: Part III-Rereading, Memory, Multitasking

- Re-reading habits
  - Pleasure vs. academic work
  - For each context, more likely onscreen or in hard copy

- Remembering what you read
  - Better onscreen or in hard copy

- Reading and multitasking
  - More likely to multitask when reading onscreen or in hard copy
    - NOTE: Consistent findings in multitasking literature that concentration, learning decline when multitask
Key Questions:
Part IV: Printing, Doing the Reading

- Printing
  - For academic work and for pleasure reading, if material is available online, do you
    - Read onscreen
    - Print out and read
    - Read onscreen but then print out

- Doing the reading
  - Are you more likely to read an assigned article if
    - It is online
    - If you are handed a copy
Key Questions:
Part V-Written Feedback; Part VI- Advantages/Disadvantages

- Receiving comments on written assignments
  - Do you prefer
    - Online comments in a document file
    - Handwritten comments on physical submission

- Reading comments on written assignments
  - Are you more like to read comments carefully if they are
    - Online comments in a document file
    - Handwritten comments on physical submission

- Biggest advantage/disadvantage of
  - Reading onscreen
  - Reading in hard copy
Course textbooks
- 62% sell at end of semester
- 51% renting hardcopy textbooks this semester
- 7% renting electronic downloads of textbooks
- 11% purchasing electronic downloads of textbooks

Annotation habits: underline/highlight/make notes
- Most of the time: 22%
- Sometimes: 30%
- Occasionally: 30%
- Never: 17%
## Results:
### Part II – Medium Preference

<table>
<thead>
<tr>
<th>Medium Preference: Academic Work/Pleasure</th>
<th>HARD COPY</th>
<th>ONSCREEN</th>
<th>DON’T READ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course text</td>
<td>98%/NA</td>
<td>2%/NA</td>
<td>0%/NA</td>
</tr>
<tr>
<td>Non-fiction (serious)</td>
<td>89%/86%</td>
<td>7%/2%</td>
<td>4%/12%</td>
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<tr>
<td>Non-fiction (light)</td>
<td>88%/82%</td>
<td>7%/7%</td>
<td>5%/11%</td>
</tr>
<tr>
<td>Fiction (serious)</td>
<td>94%/84%</td>
<td>5%/7%</td>
<td>1%/8%</td>
</tr>
<tr>
<td>Fiction (light)</td>
<td>94%/89%</td>
<td>4%/7%</td>
<td>2%/3%</td>
</tr>
<tr>
<td>Academic journal</td>
<td>43%/NA</td>
<td>57%/NA</td>
<td>0%/NA</td>
</tr>
<tr>
<td>News magazine</td>
<td>54%/53%</td>
<td>45%/39%</td>
<td>1%/8%</td>
</tr>
<tr>
<td>Newspaper</td>
<td>46%/41%</td>
<td>54%/52%</td>
<td>0%/7%</td>
</tr>
</tbody>
</table>
Results:
Part III-Rereading, Memory, Multitasking

- Re-reading habits
  - Academic: 42% reread “most of time” or “sometimes”
    - BUT: 65% more likely to reread if in hard copy
  - Pleasure: 39% reread “most of time” or “sometimes”
    - BUT: 74% more likely to reread if in hard copy

- Memory for what read
  - More if read onscreen: 2%
  - More if read in hard copy: 52%
  - Same for both media: 46%

- Reading and multitasking
  - More if read onscreen: 90%
  - More if read in hard copy: 1%
  - Same for both media: 8%
Results:
Part IV - Printing, Doing the Reading

- Printing material available onscreen
  - Academic: 39% print out and read hard copy
  - Pleasure: 15% print out and read hard copy

- Doing the reading: more likely to read if
  - Available online: 6%
  - Handed hard copy: 55%
  - No difference: 39%
Results:
Part V-Written Feedback

- Receiving comments on written assignments
  - Prefer comments using Track Changes: 16%
  - Prefer handwritten comments: 58%
  - No preference: 26%

- Reading comments on written assignments
  - Read more carefully online comments: 6%
  - Read more carefully handwritten comments: 36%
  - Response is same: 55%
  - Don’t usually read comments: 2%
Results:
Part VI-Advantages and Disadvantages

- Onscreen
  - Advantages
  - Disadvantages

- Hard copy
  - Advantages
  - Disadvantages
Results:
Additional Comments

- Of 21 codable additional comments, 19 described advantages of reading in hard copy

- Sample Comments
  - “Highlighting and making notes in the margins helps me maintain attention and retain the information”
  - “I’m more productive and efficient with my time by far if I’m reading in hard copy.”
  - “I don’t want everything to go to an online-only version, because I will then ignore a great deal of my reading.”

- Trees versus pedagogy
  - “I know it’s a waste of paper, but I really prefer reading a physical book or article to reading it online.”
  - “I prefer hard copies, but think they’re bad for the environment.”
Summary of Main Findings

- Changing relationship with academic materials
  - Many no longer see textbooks as personal property
    - 1/2 - 2/3 rent for semester or sell at end of semester
    - 1/2 don’t annotate
  - 1/2 don’t generally reread academic materials

- Preferences for hard copy over onscreen reading
  - For course texts, non-fiction, fiction (academic & pleasure)
  - More likely to reread if read in hard copy
  - More likely to remember if read in hard copy
  - More likely to read article if handed hard copy
  - Many print out material before reading
  - Prefer handwritten comments on papers (not Track Changes)

- Multitasking
  - Far more common when reading onscreen
Issues to Consider

Presently, even “digital natives” (18-24 years old) perceive print to have advantages over onscreen reading.

However, will reading onscreen become increasingly common (and domesticated), for reasons of

(a) convenience
(b) cost
(c) assumptions by universities about what students want

If so, what are the implications for what it means to read?
Potential Redefinitions of Reading

- Written text (even “serious” text) progressively seen as ephemeral, with implications for reduction in
  - rereading
  - memory
  - “deep reading”

- Prime culprit in undermining notion of reading being a linear, reflective, sustained process will be the temptation to multitask while we read
  - cf historical arguments that literacy makes possible analytical thought (Eric Havelock, Preface to Plato)
Caveats and Concerns

- Caveats
  - “The technology is still new, and users will adapt”
    - BUT: We would expect the “digital generation” to already have adapted

- Concerns
  - Once we lose a conception of what it means to read, do we know it is gone? Compare
    - spelling and proofreading skills
    - mental math (or simple written arithmetic)
    - handwriting
Thank you!

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