**Electronic Versus Paper Text: Which is Better?**
Samantha A. Ricker, Michael J. Stroud, and Raymond J. Shaw

**Department of Psychology, Merrimack College**

### Background
- When purchasing text book material, the paper-based version is preferred over the computer-based version (Sheppard, Grace, & Koch, 2008).
- When identical tests were given, paper-based test scores were slightly greater than computer-based test scores (Mead & Drasgow, 1993).
- Reading from a computer requires more cognitive effort, including visual fatigue, inability to directly mark text, and the inability to see the entire text at one time (Noyes, Garland, & Robbins, 2004).
- The present study is the first known to systematically compare college-level material in terms of textual format.

**Present Investigation:**
- Does reading college-level material from a traditional paper textbook differ from an electronic format of the text?

### Method

**Experiment 1:** Read a excerpt from a common introductory psychology textbook and answered 20 questions directly after.

**Experiment 2:** Identical to Exp. 1, but participants were given the option to highlight and/or take notes.

<table>
<thead>
<tr>
<th>Experiment</th>
<th>Participants</th>
<th>Highlighting and Notetaking</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>N = 54</td>
<td>No highlighting</td>
</tr>
<tr>
<td>2</td>
<td>N = 30</td>
<td>Highlighting/notetaking</td>
</tr>
</tbody>
</table>

- In both conditions, half read from paper-based* text and half read from computer** text.
- Comprehension questions were selected from the publisher’s test bank as an appropriate representation of the material read.

**Publisher supplied e-text available through www.coursesmart.com

### Results

**Experiment 1**
- No significant difference in reading times (p = .124) or comprehension scores (p = .747) across conditions.

**Experiment 2**
- No significant difference in reading times (p = .322) or comprehension (p = .245) across conditions.

### Conclusions
- Highlighting Behavior: Computer-based readers produced fewer total highlights, but more words per highlight compared to paper-based readers.
- In both formats, participants spent significantly longer reading the material when allowed to take notes.
- The present study showed that there is no difference in the levels of comprehension between the two text formats.
- Results suggest that when allowed to take notes, reading via paper is best.
- Overall, comprehension was very low with the publisher’s recommended question bank.

### References

### Future Research
- Interactive computer-based texts may increase immediate comprehension.
- How much material is retained over time?
- Explore alternative formats (Touch screen tablets, smart phones, etc.).
- Will common study techniques (self-quizzing, re-reading, etc.) interact with reading format?
- Is paper-based superior to computer based?

### Format

2 x 2 ANOVA with Format and Highlighting/Notetaking as between-subjects factors
- Significantly longer reading times when permitted to highlight and take notes (p < .001)
- Marginal Format x Highlight/notes interaction for reading times (p = .078)
- No main effects or interaction for comprehension