Display & Reading Comprehension

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Introduction

- Studies have shown that people have a strong preference for print over digital media.
- Apple Software uses anti-aliasing technology, which creates the illusion of curved edges similar to the pages found in a textbook.
- Reasons That people prefer Printed media:
  - Hardware: Eye strain, limited viewing panels
  - Software: Font style, font size, orientation and navigation difficulties/inconveniences
● In a study by Young (2014), two study groups (one reading print, and one reading online text), read text and were asked to answer questions about the text.
● They were not given any time constraints and were allowed answer the questions after reading the article, but were allowed to reference the text to answer.
● Results: both groups answered, but their methods were different.
   -The online group scrolled through the text just to find facts, and then referenced the textbook afterwards.
   -The print group did not need to reference the material; they were more engaged with the material

● A similar study was conducted by Ackerman & Lauterental (2012), but with time constraints.
● In this experiment, the online group had much lower scores than the print group did.
Hypothesis

People will have a higher level of reading comprehension when reading print material over online material.
Methods

- **Participants** (N=30)
- **Materials:**
  - Laptop, paper copy of both passages, question sheet for each reading, and a writing utensil.
- **Selected readings:**
  - Passage 1: *Pride & Prejudice*
  - Passage 2: *The Great Gatsby*
- **Four Conditions:**
  - 1) Computer 1 (P&P), Paper 2 (GG)
  - 2) Computer 2 (GG), Paper 1 (P&P)
  - 3) Paper 1 (P&P), Computer 2 (GG)
  - 4) Paper 2 (GG), Computer 1 (P&P)
Methods

- **Procedure:**
  1) Researchers presented each participant with a brief passage to read.
  2) After reading the passage, participants completed a two question reading comprehension assessment.
  3) The process was then repeated for the second reading passage.
  4) Debriefing
### Results

#### Paired Samples Test

<table>
<thead>
<tr>
<th>Paired Differences</th>
<th>t</th>
<th>df</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>Std. Deviation</td>
<td>Std. Error Mean</td>
<td>95% Confidence Interval of the Difference</td>
</tr>
<tr>
<td>Pair 1</td>
<td>comquest - Paperquest</td>
<td>.10000</td>
<td>.95953</td>
</tr>
</tbody>
</table>

- Repeated Measures (Within Subject) T-Test
- T = .57, P > .05
- M = .10, St. Dv. = .96
- No difference between computer questions vs. paper questions
- Not statistically significant study
Discussion

- Overall our hypothesis was not supported.

- Our results are both similar and different to the ones found in Reference #1
  - Experiment #1:
    - Hypothesis supported
    - No difference when given free regulation
    - Between subject design; ANOVA
    - Main effect and interaction
    - Statistical significance; OSL scored less than OPL participants
  - Experiment #2:
    - Within subject design; ANOVA
    - Hypothesis supported and not supported
    - Statistical significance for time
    - No main effect on order
    - Main effect and interaction for 3-way ANOVA
Discussion (cont.)

-Our results are more different than similar for those found in Reference #2

-Tested computer vs. paper while using advertisements
-Tested for recall and recognition
-Between subject and within subject design

-Hypothesis #1: Print recall higher than screen recall for ad claims
   -Statistical significance
   -Recalled more information; Higher % success rate

-Hypothesis #2: Print recall higher than screen recall for nonpersuasive information
   -Statistical significance
   -Recalled more information; No higher % success rate

-Hypothesis #3: Memory for nonpersuasive information greater than persuasive information
   -Statistical significance
   -Recalled more information; Higher % success rate

-Hypothesis #4: Differences between paper and screen will disappear for nonpersuasive information
   -No statistical significance
Discussion (cont.)

- Our results are more different than similar to those found in Reference #3

- Model A:
  - More variance when texts read second rather than first

- Model B:
  - Text for absolute value has no clear difference between text order
  - Singular Variables
    - Statistical significance for situation model when text read first
    - Statistical significance for self-efficacy when text read second
  - Current text shows more variance of student self-assessment when text read second

- Model C:
  - No singular variable statistical significance for text

- RQ1:
  - More statistical significance of self-assessment for text about absolute value

- RQ2:
  - More statistical significance for text about practical fraction decomposition
  - Statistical significance when text read second
Discussion (cont.)

- Our results are both similar and different to the ones found in Reference #4

- No hypotheses, just research questions

- RQ1: Is the on-line reading process similar to reading the printed page as measured by the reader’s comprehension and retention of information? If not, why and how do they differ?  
  - They are the same

- RQ2: What reading strategies that differ from print do readers adopt when reading online?  
  - They scroll through to retrieve facts from the Internet and then verify the facts on paper

- Completed questionnaires after each text
- No measurable difference between paper and screen reading processes
  - Read each in depth
References


