The Effect of Structural Cues Online: Using the Internet to Assess Users Remotely

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Overall Research Goals

- Assess the effect of structural cues on browsing (reading to learn), not searching (reading to do)
- Assess users in natural environments
- Generate experimentally based guidelines for information design
- Advance capabilities of technology to support remote user testing, e.g., our toolkit—WebLab UX
Why Internet Based Research (IBR)?

- IBR with WebLab UX can study users:
  - Who visit a Web site in their own time and space
  - Who are difficult to bring into a lab
  - In large numbers at low cost
  - Longitudinally
Our Toolkit: WebLab UX

- Open-source and server-side solution
- WebLab UX allows web design stakeholders to:
  - Tag dependent variables (e.g., pages visited, links clicked)
  - Instantiate independent variables (e.g., varying Web site content, nav. design)
  - Compose and insert surveys (pre/post browsing)
  - Set up study protocols
  - Assign subjects to conditions
  - Track navigation behavior for unique users
  - Link survey responses to behaviors
  - Create exportable data files
Example Study: Text Previews & Menus

❖ Effect of text previews and menus on comprehension, behavior, and perceptions

❖ Hypotheses

➢ Previews will increase comprehension, time on pages, and ratings of usefulness

➢ Nav. menus will increase site exploration and ratings of site usability
Methods

- Conducted remotely on the Web
- 282 participants (Engr. Classes)
- 6 conditions: text previews (3 levels) and navigation tab menus (2 levels)
- Scenario: Learn about Big Bend park to support upcoming job as tour guide
Big Bend is famous for its natural resources. The park, with its spectacular geology, is home to more than 1,200 species of plants (including approximately 60 cacti species), 11 species of amphibians, 56 species of reptiles, 40 species of fish, 75 species of mammals, 450 species of birds, and about 3,600 species of insects. The park boasts more types of birds, bats, and cacti than any other national park in the United States. Learn about the challenges to preserving the Air Quality in Big Bend, the Geological Formations that have shaped the land, the diverse Plant Life found within the park, and the unique contributions of the Rio Grande River to life in the region.
Materials

Structure of the Web Study: What the User Experiences in One of the Conditions

Consent Form  Instructions  Demographics  Browse Website  Perceptions  Comprehension

Data from user's session stored on server
Preliminary Results: Comprehension

- Previews with embedded links led to significantly greater *inferential* comprehension than previews with link list.

- Nav. Menus did not influence comp.
Preliminary Results: Behavior

- List only (previews) led to greater exploration (% pages visited) than previews with a list.

- Pres. of menus led to greater exploration (% pages visited) than absence of menus.
Preliminary Results: Perceptions

- Previews w/ list and link list only led to sig. higher ratings on Systematic Usability Scale (SUS) than prev. w/ emb. links (Use ratings very similar)

- Presence of menus led to sig. higher SUS ratings than absence of menus (Use ratings very similar)
Preliminary Results: Usability Perceptions

- Previews with embedded links are most negatively affected by the absence of menus (Use ratings very similar)
Conclusions from Our Studies

- Signals do not equally affect print and online readers
- Doubling up on signals and using explicit wording can positively affect users
- Users like what they are used to but can perform well with multiple types of signals
- Users may perform differently than they perceive—and that design decisions must be made in context
- Online readers do need structural cues
Future Directions

- Finish analyzing results from recent studies
- Continue developing WebLab UX
- Compare user testing methods: e.g., Internet based research, lab based usability, eye tracking (in usability studies), contextual inquiry
- Continue to provide empirical support for information/interaction design guidelines
- Investigate design of Web sites for portable and small screen devices
Welcome to the home page of the Internet Based Research group, a Directed Research Group in the Department of Technical Communication. The group, directed by Professor Jan Spyridakis, has been studying how various features of the design of online information affect user behavior, comprehension, and perceptions. The research has focused on using online, remote methods to identify how people are using Web sites in order to optimize the user experience and on refining a software tool kit (WebLab-UX) that will dynamically generate alternative Web sites, deliver them randomly to participants through the Internet, generate surveys, and collect survey results as well as server log files and structured log data. Our goal has been to study user interacting with Web sites using their own computing environments at a time of their own choosing.

We welcome your interest in our work, whether that is in taking a look at our past and current studies, looking at the results of some of our published studies, or seeking our support in helping you assess online information and its design. We are seeking funds and cooperative projects. We hope to be able to spend more time developing tools to integrate with host Web sites of stakeholders who want access to the results of their site decisions. Our goal is to refine our WebLab-UX so that researchers, usability specialists, and other stakeholders can use it to assess samples of subjects remotely through the Internet. If you are interested in talking to us about such uses of our WebLab-UX or funding opportunities, or about using a specific Web site as a testbed, please email Dr. Spyridakis at jarep@uwashington.edu.