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CIS 443/543, Fall 2019

### Project #3 Conduct a User Observation Study

**Due dates:**

• 9AM, Monday, November 25, 2019: An initial draft of Sections I and II of your Usability Report.  
• 9AM, Monday, December 2, 2019: Complete project due, including an in-class presentation.

**Purpose of assignment:**

Evaluate your system with a user observation study. Identify how certain design decisions may help or hinder efficient and effective use of the system. Figure out what works with the interface, and what are problems with the interface. Propose reusable design decisions based on what worked, or design modifications to address these problems.

**User Observation Study**

The point of this project is to provide a substantial and realistic evaluation of a user interaction technique and of a specific user interface. You should strive to get your evaluation as close as possible to observing real users doing real tasks in the actual intended context of use. Follow the guidance provided in Chapter 7 for conducting user observation studies. Write a script that you will follow each participant. Turn in the script with your evaluation. The script should incorporate all of Apple Computer's [Guidelines for Conducting User Observations](https://classes.cs.uoregon.edu/19F/cis443/Handouts/Apple_User_Observation.pdf) (PDF download; by Apple Computer).

**Some specific experimental design criteria**

1. Determine what system or two systems that you will evaluate. This can be two different versions of Project 1s that are different in a specific and interesting manner. For example, if you substantially improve the initial interface based on feedback from the instructor, you could evaluate the original versus the revised versions. You could also evaluate the UO Information Technology Service Portal at https://service.uoregon.edu, but you will be challenged with finding an interesting alternative version to the system to evaluate (sending an email to an address is not a good comparison, sort of a "straw person" comparison).  
2. Pick the independent variables that you want to manipulate.  
3. You can also look at practice effects, such as how practice with one interface helps a user to perform in a subsequent block with another, or the same, interface.  
4. Decide on whether you want to do a within-subjects or between-subjects design, and justify it in your report.  
5. Collect data from at least five participants for each combination of factors (or ten participants if you are working as a pair of students). Please do not recruit computer science students or students in this class for your study. You want your users to be as close to real users as possible.  
6. Make sure you have a reasonable set of specific tasks for the user to accomplish. Each user should spend roughly 20 minutes spent interacting with the interface.  
7. If you are working as a pair of students, you should be working with at least two independent variables systems.

**Record your data**

Record the user interaction of your user observation study. Record the user's button presses and all of the system outputs, including the relevant visual feedback that the user gets. This will probably require videorecording. Make sure that your videorecordings have a stable image (by using a tripod), have adequate sound quality to hear all of the system auditory output and user statements, and have good exposure and focus. Make sure that all of the user's inputs into the system, and all of the system's outputs, whether auditory or visual, can be clearly seen and heard. You can reserve and check out a video camera and tripod from the [Center for Media and Educational Technologies](http://library.uoregon.edu/cmet/classrooms/circ.html), at 346-3091. Test the camera setup before the actual user observation study to make sure that you will be able to clearly capture what is displayed by the system along with the user's inputs to the system.

**Submit** via the UO Canvas, a single .zip file that contains:

1. Usability Report. Use the structure of the report given below.  
2. A 5-to-10-slide PDF presentation that shows the results of your study.  
3. A .zip file of the code you used in the study (but please do not submit the "wav\_files\_provided" folder).

**Submit** at the start of class, in a document-sized envelope with your names on the outside:

1. The video from the user study on a CD or DVD or USB thumb drive (which I will return to you).  
2. An [informed consent form](https://classes.cs.uoregon.edu/19F/cis443/Handouts/Informed_Consent.pdf) (PDF download) signed by every participant in the study.

**Class Presentation**

Prepare a brief, 5-to-10-slide 5-minute presentation that briefly describes the questions that your study examined, the user interface and all variations that were used, the experimental methodology, the data you collected (including speed and accuracy for each condition), and conclusions that you have formed. Your audience will be the students and the instructor in this class, so focus your presentation on the things that were unique to your study, and do not restate the assignment for everyone. Practice your presentation. [Guidance for the in-class presentations](https://classes.cs.uoregon.edu/19F/cis443/Handouts/P4_presentation_guidance.pdf) (PDF) has been provided.

**The User Observation Study Report**

The report should include about 2,000 words (per student if you are working in pairs) in addition to all of your test materials such as your testing scripts, notes from your debriefing sessions, and consent forms. Structure your report as follows. (Note that Appendix A.1 of the course textbook (on p.366) provides an example that follows a structure similar to this. Also note how clearly the graph in Figure A.3 clearly summarizes the data for each level of each condition.)  
  
***I. Introduction***

* The system being evaluated - A brief description of the system.
* Overview of study - A high level overview of the goals of your user observation study such as: (a) specific hypotheses that the study will test, and/or (b) objectively measurable usability goals such as being able to accomplish a set of benchmark tasks within a certain amount of time, without exceeding a certain number of keystrokes or button presses, and while maintaining a certain level of accuracy.

***II. Methodology*** - This section should make it clear to the reader exactly how the study was conducted, and thus how well the study created an opportunity to find true and real cause-and-effect relationships between the interface and the usability measures.

* Participants - Describe who participated in your study and how you recruited them. For example, describe the participants' ages, occupations or majors, and experience with the sort of technology and systems being evaluated. This will help the reader to understand the participants and their motivations and expectations when trying out the system. But do not provide any identifying information of the participants, such as their names or their specific familial relationship to you.
* Setting - Describe the physical and social setting in which the evaluation took place. It is okay to disclose a specific location.
* Materials - Describe your testing materials, such as the computers and devices that you use to conduct and record the evaluation, and the materials that you use when running the study such as your testing scripts.
* Experimental Design - Describe the different treatments ("conditions") that you will be using in the experiment (such as with visual and without visual, or one interface versus another interface) and the specific organization of the individual tests (called "trials") that you will be presenting to your participants/users, and how the trials are organized into useful groups (called "blocks"), such as a block of five trials with the visual feedback followed by a block of five trials without the visual feedback, with this order reversed for half of the participants.
* Procedure - Describe the specific steps that you took to administer your user study.
* Threats to external validity - Identify three threats to external validity and explain how the experimental design combatted these threats.

***III. Results*** - This section summarizes the results—the data that were observed—including from watching the video, and should permit the reader to determine for him or herself whether the data support the hypotheses, and whether performance targets were met. For example, summarize how long each participant took to do each task, with how many button presses, how many errors, and how much backtracking, as a function of each unique experimental condition. Perhaps include a section for each of the measures. Also, report specific usability problems that arose.  
***IV. Analysis*** or ***Discussion*** - This section responds to the results, such as to identify trends in the data, and to propose explanations for why those trends appeared. Rather than reporting the data, this section summarizes and organizes the conclusions that you draw from the data. You can organize your subsections based on the trends. Be sure to include:

* Overall assessment of whether design decisions helped or hindered efficient and effective use of the system, and whether the system met its usability goals.
* If two systems were compared, an assessment of the strengths and weaknesses that emerged.
* Proposed interface modifications.

***V. Conclusion*** - Briefly summarize the findings of the study, what was learned with this project (either specific to the study or about user interfaces in general), and any thoughts about the system that you built or might like to build as a result of this project.

#### Criteria for Evaluation

The projects will be graded based on the following:

* Does the study provide a useful, informative, and substantial (a) evaluation of a single user interface or (b) comparison of two user interfaces that are different in a specific and interesting manner?
* Does the methodology clearly explain the experimental design and how the data were collected?
* Was the experimental design a good design (such as, well-balanced, with good validity)?
* Were threats to validity identified and combatted against?
* Are the observed data summarized in a useful and informative manner?
* Does the analysis identify interesting trends in the data and propose explanations for these trends?
* Does the conclusion provide a thoughtful summary of what was learned in the project?
* Did the class presentation concisely convey the experiment and conclusions?