

# CS 465 Principles of UI Design – Homework 5

Due October 24, 2008

## Overview

For this homework, you will conduct an empirical study comparing how well users can perform similar tasks using two competing interfaces in your project design. For example, you could compare entering or retrieving information on two different web sites or interfaces. The goal is to determine which interface better supports the tasks, understand why, and recommend how to improve both interfaces. You should follow the guidelines discussed in TCUID (Chapter 5).

## Develop the Tasks

Once the two interfaces have been selected, the next step is to develop 2 tasks which users would commonly perform with those interfaces. You should give users all of the information necessary to perform the tasks and give a clear description of what goals they are supposed to accomplish.

Keep in mind this varies with each project group. The description for each task should not be more than a few paragraphs. Also, it is useful to describe a higher-level scenario that the user can identify with. This helps the tasks seem more realistic. For example, I am working on code with a friend who is in Louisiana. We have to integrate are code for a deadline in one hour.

## Users

You need to recruit at least three users who will perform each task with each interface. This is known as a *within-subjects* design. To mitigate learning effects, you should counterbalance the order of the interfaces and randomize the order of the tasks. Counterbalancing means that half of the users use Interface 1 then Interface 2; while the other half use Interface 2 then Interface 1.

## Setup and Metrics

You need to determine the metrics for which you will compare the two interfaces. For example, you may measure completion time and number of errors committed for each task and measure user satisfaction for each interface. You need to determine what qualifies as an “error” and what questions would best measure satisfaction for the interfaces. You must also determine how these measures will be collected. For example, you may want to electronically record a user’s screen interaction and use the time stamps in the video to determine completion time. The video could also be analyzed for errors. For satisfaction, you will need to develop a suitable questionnaire.

## Conducting the Study

You should provide a brief overview of the study to the user. This should include a description of your objectives, any special equipment being used, what data is being collected, a brief summary of what they will be doing, and how long it will take. You should design and read from a script, ensuring that all users hear the same information. If needed, allow the user to perform practice tasks with each interface. While a user is performing the tasks, make yourself as inconspicuous as possible. Since this is a more formal study, the use of a verbal protocol is probably not necessary, but you are welcome to have users think aloud if you feel that this would be useful.

## **Interpreting the Results**

Once all of the data is collected, you need to interpret what it means. A useful approach is to create a visual summary of the data. For example, create a bar graph showing the dependent variable (completion time, number of errors, dimensions of satisfaction, etc.) clustered by Task and Interface. Is there a consistent pattern to the results between the interfaces? How much do the interfaces differ along each measure and how meaningful are these differences? Can you explain the underlying reasons for the differences? Based on results and an analysis of how users interacted with both interfaces, how could the interaction design of the interfaces be improved?

## **What to Turn In**

You need to turn in at least the following information:

- A brief overview of each interface used in the study. Include URLs if appropriate.
- The narrative for each task that you gave to users.
- The script you read from at the beginning of the study.
- Questionnaire forms.
- Description of the metrics used and an explanation of why they were selected.
- A summary of the raw data collected (spreadsheets, interaction videos, etc.).
- Visual summaries of the data used to make sense of the results.
- Interpretation of the results.
- Recommendations on how to improve the interfaces.