**ITIS 6400 Principles of Human Computer Interaction**

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**Class Activity – Experiments and Analysis**

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You are evaluating a new version of your organization’s website, which was redesigned to try and reduce user confusion on the home page, improve how many people create accounts on your site, and increase how long they spend browsing the website.

**Part 1: Experiment design**

**Question 1. What hypotheses would you be evaluating in your experiment?**

* The new website will reduce the user’s confusion when browsing through the website.
* The less confusion about the website enables the users to create more user accounts for the website.
* The new website will increase the amount of time spent browsing through the website.

**Question 2. What is the independent variable? What are the dependent variables for this experiment?**

Independent:

* Layouts of the website
* Layouts of the buttons
* Race, sex, or gender

Dependent:

* User Satisfaction
* User frustration
* Good and bad features used
* Number of errors
* Time consumptions on interactions

**Question 3. What are the reasons for choosing a “within-participant design”, and what are the reasons for choosing a “between-participants design.” Which would you choose to use?**

We would choose ‘between-participants design’ because we can assign different group or different person to evaluate. There would be efficient results, if there exists no history of performing these tasks. There would not be any carryover effects of the previous tasks and the accuracy rate of performing these tasks can be measured.

**Question 4. For each of your dependent variables, indicate how you would plan to measure this in an experiment.**

Dependent:

* User Satisfaction
* User frustration
* Good and bad features used
* Number of errors
* Time consumptions on interactions

User satisfaction and frustration can be measured with reviews and feedback of the website within it. Good and bad features can be measured on the amount of clicks the user makes on the home button. The number of errors can be measured on the amount of clicks on back button. The time consumptions can be measure by counting the number of clicks used to get to a particular resource.

**Question 5. If you ran this study in a lab setting, what kinds of tasks could you give to users in order to gather your data?**

Create a user account within this website.

Read about the different blogs or current events.

Find what is the website is about in the about us page.

**Question 6. If you ran this study on the deployed website, how would you gather your data?**

Count the number of clicks it takes for the user to get to the desired page. Count how long a user has to scroll to find the desired item. Most importantly follow the eye trackers results to see what the user looks at the most.

**Question 7. Threats to validity of an experiment are any factor that might lead to an incorrect conclusion. In other words, if you see changes to your dependent variables, could there be other causes or explanations for such changes? What possible threats to validity do you see for the experiment run in the lab (Question 5), or in the field (Question 6)?**

In the lab the experiment is in a controlled environment. Such as device used to look at the website, same internet speeds used to browse through the website. In the field there are way more variables that cannot be controlled that can affect how the users interact with the website.

As we are using the between-participants design the individual differences might also lead to incorrect conclusions.

**Part 2: Analysis**

**You have gathered the following data for the experiment. Design 1 is your existing site, design 2 is the re-design**

Seconds spent on the website:

Design 1: 36, 75, 35, 64, 24, 35, 22, 86, 32, 25

Design 2: 44, 54, 68, 62, 54, 58, 38, 44, 78, 66

Answer to the question: How confusing was the information on the website (1 – 7, with 1 being not at all, and 7 very confusing)

Design 1: 6, 7, 5, 5, 3, 2, 5, 4, 5, 5

Design 2: 4, 3, 4, 3, 2, 2, 2, 7, 3, 3

**Calculate the mean and median for each set of data:**

Design 1 time: mean is 43.4 and median is 35

Design 2 time: mean is 56.6 and median is 56

Design 1 survey: mean is 4.7 and median is 5

Design 2 survey: mean is 3.3 and median is 3

**Just based on looking at the above data, which design would you think is better? Why?**

The design 2 time had a higher mean and median time in the data compared to the design one results. As the user spends more time the second design it is more attractive and easy. Considering that the design two survey went down in the numbers as well meaning that the website is not as confusing to users now. So in conclusion the design two is better because the data is the proof that design two has improved since the redesign.

**The p value for the comparison of times for the 2 designs is 0.13. The p value for the comparison of the confusion ratings is 0.05. What does this mean for the results?**

The first case for the comparison of times indicates the p value is 0.13, in this case there exists weak evidence against null hypothesis, so we can reject the null hypothesis. As the change is not statistically significant, we cannot accept the alternative hypothesis.

In the second case of comparison between the confusion ratings it is 0.05, it indicates strong evidence against the null hypothesis, so we reject the null hypothesis. As the change is statistically significant, we can accept the alternative hypothesis.

**Based on one online experiment, you find that you get 5 users signing up for accounts for 100 visitors with the old design, and that you get 10 users signing up for accounts for 100 visitors to the new design. Compute Chi-squared.**

Chi-squared is 5

P-value is .025

Degrees of freedom is 1