Analysis of the ePsych Website

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IST 331: The User
Queens – Section 1

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Abstract

When designing a website, it is crucial to take the user into consideration. People need to be able to utilize the site’s contents quickly and easily. The goal of this report is to analyze the usability of the ePsych website from Mississippi State, a site that contains interactive lessons for psychology students. Having performed a task analysis and a GOMS analysis, we have proposed potential improvements to the site’s layout. The system of menus that lead users to the psychology activities could be improved to eliminate the inconsistencies and redundancies that plague the site.
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1. Introduction

The popularity of websites has been growing ever since the worldwide web was born. In the beginning, websites were plain and simple for users to navigate through if they needed to navigate at all. As more people started using websites, they began to realize the enormous potential that they held for presenting a wide range of not only information, but also a wide range of types of information. This knowledge led to a veritable explosion of websites with flashy interfaces, colorful graphics, animations, and movies to catch the eye of the web surfer.

This analysis will provide recommendations to the designers of the ePsych interactive website. Our recommendations will include suggestions for making it easier for the users of the site to navigate. We will also make recommendations to the design improvements that may make the site more effective in delivering its message. This analysis will be based upon two primary forms of information. The first form of information will be a task analysis that will combine the Keystroke Level Model and a GOMS analysis of the site. The second form of information consists of a survey of individuals who viewed the site and were then asked to choose between a complex, animated layout with many pages and layers; and a simple layout that consists of an index from which the user can select all of the interactive activities. A second question in the survey asked how important those surveyed believed graphical activity based interfaces are in learning psychology on a scale of one to five.

2. Description of Website

The ePsych website states that its main goal is to “produce a ‘natural’ interactive multimedia educational website that teaches visitors about the mind.” The site lists no
specific users; however the layout is designed for those with little working knowledge of psychology. The website provides users with interactive demonstrations and tutorials about basic psychology topics. The URL for the site is

http://epsych.msstate.edu/Transporter.html/.

3. Website Problems

A major issue with this website is that the menus change depending on what page the user visits. For example, within the area of the site that does not deal with the interactive applets, the majority of the pages have a menu at the top of the page that is helpful for site navigation. However, when the user clicks on the Settings page, that menu has only four options, one of which directs the user to the current page. The Awards page is blank and has no interface to help the user move through the rest of the site. There is also some variability in the menus within the interactive pages. Figure 1 illustrates the differences between the menus on the Project Information and Help pages.

Figure 1: Menus within the ePsych Site
The current layout of the ePsych website is overwhelming for a new user, or even for users who have worked with the site a few times. The current arrangement of the menus makes it seem as though the site has more content than it actually does. The inconsistencies in the interface lead to confusion for the user. If the menus were altered so that they were exactly the same on every page of the site, the usability of the site would increase. Users would be able to understand the site’s layout more easily, and as a result, would be able to navigate the site more easily.

In addition to being inconsistent at times, the site also has issues with redundancy. Once the user reaches the Transporter page, each of the four major categories of activities has a menu that appears when their respective links are clicked. There are at least three ways to arrive at many of interactive activities. For example, the “Vision in Motion” activity can be reached three different ways from the Transporter page. Figure 2 clarifies the available paths users can take to arrive at the Vision in Motion activity.
This system of multiple paths to the same page creates a great deal of redundancy in the site. Many of the links that have different names bring the user to the same information. The current arrangement of pages and links makes the site seem a great deal larger than it actually is. As we will demonstrate later in the Task Analysis, the subjects who worked with this site had trouble getting to the page they were looking for in a timely manner. A simplified and unified system of menus would lead to improved usability of the site.

4. Task Analysis

The Keystroke Level Model and GOMS analyses are two useful tools that enable designers to find out how well sites are designed. We are applying these two techniques to the ePsych website from Mississippi State University. The KLM and GOMS analyses allow us to gain insight into the usability of this site.

4.1. Methodology

The goal of our analysis is to see how quickly and easily users can find specific items within the site. Comparing the actual time to perform a task with the time predicted by the Keystroke Level Model can reveal the quality of the design. If users
take significantly longer than the predicted time to complete the task, it is likely that the site should be redesigned to improve usability and eliminate confusion.

For our study, three subjects each performed a pair of tasks on the ePsych website. None of the three subjects were familiar with the layout of this website. For the first task, the subject was asked to navigate the site to find and begin an applet or application relating to hearing. The second task was to find and begin the applet related to learning curves. The subjects did not actually have to do the applet, they were only required to navigate to the site and find the applets. Each time the subject started at the index of the site. The window was maximized, and the cursor was placed in the center of the screen at the start of each trial. We timed the subjects using an online stopwatch. After completing the tasks, we interviewed the subjects to understand the thought processes they used to do the task.

4.2. Analysis

To perform the Keystroke level model our group navigated the site and divided up each step taken. The KLM breaks the task down into keystrokes (clicking), homing (hand to mouse), pointing (moving cursor to icon), drawing (moving mouse in straight line), and mental operations of the user (Card 7). We took each single task that made up the entire task and gave it an estimated time. We also included an estimated mental process time. We then added all of the specific task times and came up with an estimated time that each of the two tasks should take. This data is located below in Figure 3.

**Figure 3: Keystroke Level Model**

K Keystroke – Our tasks require no use of the keyboard to this will be used to time a click of the mouse (.1s).
H Homing – Moving hand to/from the mouse and the keyboard (.4s)
P Pointing – Moving the mouse to the target
D Drawing – Dragging mouse in a straight line segment (this was not required for our task).

**Task 1:** Run a hearing applet

- Scan the four parts of the mind **M**
- Point to the correct part of the mind **H** **P**
- Click on a part of the mind **K**
- Look at list of options and think about which deals with hearing **M**
- Point to correct link **P**
- Click on link **K**
- Look at another list of options **M**
- Point to the hearing link **P**
- Click on the hearing link **K**
- Scan the picture and look for the applets **M**
- Point to an applet **P**
- Click on the applet **K**

\[4M(1.35) + H(0.4) + 4P(1.1) + 4K(1.0)\]
\[5.4s + 0.4s + 4.4s + 4.0s = 14.2\text{sec}\]

**Task 2:** Run an applet on the learning curves

- Scan the four parts of the mind **M**
- Point to the correct part of the mind **H** **P**
- Click on a part of the mind **K**
- Scan a list of options **M**
- Point to learning curve link **P**
- Click on link **K**

\[2M(1.35) + H(0.4) + 2P(1.1) + 2K(1.0)\]
\[2.7s + 0.4s + 2.2s + 2.0 = 7.3\text{sec}\]

The Keystroke Level Model predicts that users will navigate to the hearing applet in 14.2 seconds and the learning curve applet task in 7.3 seconds. Figure 4 shows how the subjects’ actual times relate to the predicted completion times.
Figure 4: Times predicted by the KLM vs. average times to complete tasks.

<table>
<thead>
<tr>
<th>Times</th>
<th>Task 1: Hearing applet</th>
<th>Task 2: Learning Curve applet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Predicted</td>
<td>14.200 seconds</td>
<td>7.300 seconds</td>
</tr>
<tr>
<td>Subject 1</td>
<td>28.545 seconds</td>
<td>12.937 seconds</td>
</tr>
<tr>
<td>Subject 2</td>
<td>16.999 seconds</td>
<td>13.859 seconds</td>
</tr>
<tr>
<td>Subject 3</td>
<td>42.154 seconds</td>
<td>13.874 seconds</td>
</tr>
</tbody>
</table>

We also used the GOMS model to define the goals required of the subjects, and then detailed the methods they needed to follow in order to accomplish those goals. The operations performed were solely mouse-clicks. Redundant links on the website create several different paths for one particular goal. Due to this, our GOMS model contains different paths and selections that the user may choose to complete the task (Kieras 1996, 4). The detailed goals and methods are outlined below in Figure 5.

Figure 5: GOMS

Task 1
Method for goal: Find Learning Curve Applet

Step 1: Select Mind sub-directory
Step 2: Determine if Learning Curves Applet is found within subcategory; If not, repeat step 1.
Step 3: Select Learning Curves Applet
Step 4: Return with goal accomplished

Task 2
Method for goal: Find (any) Auditory Applet

Step 1: Select Mind subcategory
Step 2: Determine of Auditory Applet will be found within subcategory If not, repeat Step 1.
Step 3: Select Senses subcategory If distance senses, go to Step 4
If module, go to Step 4
If visitor’s center, go to Step 5

Step 4: Determine of Auditory Applet will be found within subcategory
If not, repeat Step 1.
Step 5: Select orientation map (only clickable link)
Step 6: Select Hearing subcategory
Step 7: Select any applet on Auditory Aisle
Step 8: Return with goal accomplished

4.3. Results

The ePsych website definitely prides itself on technological proficiency and elaborate interface. The website is alive with frequent but crowded moving graphics and tabs. There are lots of interactive lessons for the user to perform. For such a functional website ePsych is very non-uniform. It has trouble being constant between pages and easily confuses the user.

Based on the fact that the actual times are much larger than the predicted times, it seems to our group that the ePsych website interface is inefficient. Through interviewing our subjects we found that they were confused and displeased with a few specific aspects of the site.

One of the first difficulties that our subjects came across was the boxes with abnormal closing methods. After the user clicked on a part of the mind another box popped up with several options regarding that part of the mind. If they realized that they had clicked on the wrong part, every one of them had trouble closing the box and clicking on a new one. Figure 6 shows a screen shot of this page. Notice there is no ‘X’ in the top right corner and there is no close button at the bottom of the box. The close option is text stating “click to close” in the top left.
Another problem that the subjects ran into was the fact that the interface changes from page to page. As mentioned before, the menu bar is at the bottom of the page when starting on the index. After the subject gets past the homepage the menu is different and on the top. The rest of the interface completely changes colors and format from page to page. The users found this extremely confusing.

5. Survey

We surveyed 28 subjects who each viewed the site and then filled out the survey that we gave them. A sample of the survey is shown below in Figure 7.

Figure 7: Example Survey of ePsych Website

1. The site is very flashy but hard to navigate because of duplicate links with different paths that end up at the same information. Which layout would you prefer? Please answer A or B. An

Those surveyed were college students enrolled in an Interface Usability course and were each shown
various pages and functions of the site before being asked to complete the survey. The responses to the survey broke down into 3 main categories that are outlined below in Figure 8.

Figure 8: Survey Response Table

<table>
<thead>
<tr>
<th>Category</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘A’ and high importance on graphic interface (High is being defined as a 3, 4, or 5 response to question 2)</td>
<td>6</td>
</tr>
<tr>
<td>‘B’ and low importance on graphic interface (1, 2)</td>
<td>6</td>
</tr>
<tr>
<td>‘B’ and high importance on graphic interface (3,4,5)</td>
<td>16</td>
</tr>
</tbody>
</table>

As conveyed in the figure above, the majority of responses indicated that a simple index should be used for finding the information and applets, while the information and applets should retain the graphical nature that they currently possess. There were several responses that indicated that an index would best suit the organization of the applets, but the index would need to be aesthetic and follow the general format of the applet pages.

6. Recommendations

Based on the information we have gathered from a task analysis and from user surveys, the usability of the ePsych website could be improved with just a few modifications. Some of the site’s pages seem very cluttered, and users may become frustrated with the seemingly endless amount of ways to arrive at the same destination.

The menus within the site are not consistent throughout all of the pages. As shown earlier in Figure 1, the majority of the site’s non-interactive pages have the first layout at the top. The “Settings” page is missing the majority of those links. Based on
our analyses, a consistent menu at the top of every page of the site would improve the overall organization of the site. Uniformity within the applet menus as well as the menus on the other pages decreases the amount of time users need to find the pages they are looking for.

After doing a task analysis, it is apparent in our group that the redundancy of links should be minimized. There are many links that are labeled differently but lead to the same place. This is conveyed in the task analysis portion of our analysis. It is also outlined in our GOMS analysis as well as in Figure 2. According to Figure 2, which contains three paths to the same place, path 1 is the most efficient way to navigate. Paths 2 and 3 have more pages to navigate through and are thus less efficient. This type of problem is seen on each of the main categories (parts of the brain). The user can choose the subcategory of the brain, or they can click the picture of that part of the brain. They can also select “Modules”, or select the “Visitor’s Center.” These four uniquely labeled links bring the user to the same set of applets. Depending on the part of the brain that they originally choose, all three of these sections will eventually present the same options through different paths and in different formats. This can cause the user to think the site is much larger and unmanageable.

It is our recommendation that the “Visitor’s Center” be completely eliminated from the site. According to Figure 2 and our GOMS analysis, this is the longest path that the user can take. Our survey shows that 22/28 users sampled would prefer an index with the activities over a more graphical site with excess pages. The “Visitor’s Center” is exactly this. It is a page with the same information as the page before it but it is flashy and requires more navigation to accomplish the final goal. Having these extra pages may
confuse the user into thinking that the site has much more information than it actually does. This has the potential to overwhelm the user and hinder their understanding of the site layout. This could potentially make them uncomfortable using the website.

7. Conclusion

According to our survey, 22 out of 28 users believe that in a site used to learn about psychology through interactive applets, a graphical user interface is important. The ePsych website is filled with graphics and animation. Our group concurs that this is an effective way to build this type of website. The graphical user interface gives more life to the topic of psychology. It is more likely to keep the users interested and on task than a site with purely textual information. If the ePsych website eliminated redundant links, offered the most efficient path to the activities, and maintained a consistent format and menu our group has shown that the site’s overall functionality will increase.

8. References

