Interface Analysis of DiscipleMakers’ Websites
Class Final Project IST 331 – Eight of Diamonds

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Abstract
An organization’s website is what represents them on the Internet. It is a significant tool to inform the world about the organization and to establish credibility amongst competitors. We first analyzed the user profile of DiscipleMakers’ main website. We gathered data using Google Analytics and made conclusions about how the website is being used by users. The second analysis we explored was a task analysis of both the DiscipleMakers’ main website and their staff website. We found that compared to the main website, the staff website was significantly more difficult to navigate. The third analysis we explored was DiscipleMakers’ main website using a perception analysis. It was our goal to explore reasons why the visual features of a website are important, as well as to investigate what a user perceives as they analyze specific areas of different websites. We found that compared to a similar Christian organization’s website (Penn State Cru), DiscipleMakers’ website could benefit from some improvements to their color scheme choice and organization of information.
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Introduction

In our project report we will discuss our analysis of DiscipleMakers’ main website and their staff website. The two websites that are being looked at are www.dm.org and www.staff.dm.org. DiscipleMakers is a non-profit Christian organization with their headquarters located in State College, Pennsylvania. The organization began at Penn State in 1981 and since then has grown to include eight other campuses. Their motto is “Reaching the campus, reaching the world.” They hope to make an impact on college students’ faith and then when those students graduate, they will go out into the world and share their faith. By the end of 2007 DiscipleMakers had 48 paid (through support raising donations) staff members and reached $2 million in income, becoming a multi-million dollar corporation. DiscipleMakers also has volunteers (between 2 and 10 at a time) that come into the headquarters and assist in processing donations (“Our Story”). At the rate this organization is growing, they will need to look into creating a more organized and user friendly website.

The following report will include a users profile, a task analysis comparing DiscipleMakers’ main website (shown in Figure 1) and staff website, and a perception analysis. Analyzing these websites is important to help DiscipleMakers improve their organization and to help other similar Christian organizations to learn and improve their websites as needed. Our goal is to make well thought out and helpful suggestions for DiscipleMakers to take into consideration when implementing changes to their site.

Figure 1. A Screenshot of DiscipleMakers’ home screen on their website. (http://www.dm.org).
Users Profile

Our group investigated the user's profile of the visitors that frequent DiscipleMakers' main website. We chose to analyze the main website instead of the staff website because the main website has the capability of being accessed by more users other than the currently employed staff at DiscipleMakers. We used a tool called Google Analytics to gather the information on the users who access the main website. Google Analytics was designed by Google to help show companies how visitors arrived at the site and explored it, and how the organization can enhance their visitor experience. It is a very helpful resource to keep users coming back. We were able to use the data gathered from Google Analytics in Figure 6 of our Perception Analysis. Google Analytics provided us with the information of how many times a page was viewed, and it ranked the pages in order from most viewed to least viewed.

The majority of users that view DiscipleMakers' main website are returning visitors, as you can see in Figure 2. This data was collected in the span of a month (March 23, 2012 to April 22, 2012). Within that month, there were approximately 13,000 page views total on the site. It is definitely a good thing to observe that users are coming back to the website (what DiscipleMakers wants). It is also important to point out that there are a large number of new visitors as well to the website. New visitors indicate that the website is still growing and attracting new audiences.

![Figure 2](image)

**Figure 2.** A pie chart from Google Analytics displaying the percentage of new visitors verses returning visitors to the DiscipleMakers' main website.

As you can see in Figure 3, the DiscipleMakers' website is a valuable tool to reach the world. Even though the nine campuses and DiscipleMakers' headquarters are located in Pennsylvania, you can see that a wide variety of other locations on the map are viewing the website. Their motto of “Reaching the campus, reaching the world” is certainly being achieved. It is important that the website maintains an ease of usability so that the dark green color on the map in Figure 2 expands to reach new locations. It would be wise for DiscipleMakers to consider how they can reach out and expand their impact on the countries with little to no views.
Figure 3. A color coded map of the different locations around the globe that have accessed DiscipleMakers’ main website. The darker the color is on the map, the more views that area of the world has had on the website.

Another important way to see how users are interacting with the website is to look at what browser they are using to access the site. Below in Figure 4 we have a screenshot of a segment on Google Analytics that shows how many visitors access the website on any given browser. As shown in the figure, most visits to the site are made using Safari. This information can be very valuable for DiscipleMakers because they could take the least used browsers and investigate why they are not used as often as the most frequently used browsers.

Figure 4. A visual representation of the different browsers used to view the DiscipleMakers’ main website. The information is displayed in a table as well as in a pie chart.
Task Analysis

Introduction
This analysis involves the examination of completion times for specific tasks from the DiscipleMakers website. The specific tasks were chosen based on their importance and use on the site. We have analyzed the results using both the Keystroke Level Model and Goal-Operation-Method-Selection Model. According to David E. Kieras, whose focus is on applied and theoretical cognitive psychology says, “The goal of this work (GOMS) is to radically reduce the time and cost of designing usable systems through developing analytic engineering models for usability based on validated computational models of human cognition and performance” (Kieras).

The Keystroke Level Model allows us to estimate the time it would take to complete certain tasks, and then we can compare these times to our subjects trials at completing the same tasks. The data shows that it is clear that the DiscipleMakers website has some design flaws. This data provides suggestions to correct their design and make the website more accessible to the public in the future.

In this task analysis, we examined three tasks from both the user website (http://www.dm.org/) and staff website (http://www.staff.dm.org/) for DiscipleMakers non-profit organization (three tasks from the user website and three tasks from the staff website). We determined that these six tasks were some of the most frequently completed tasks on the websites (reason for choosing the tasks will be explained later in the analysis). Our goal for this analysis is to measure user's’ task completion times in comparison to those of the Keystroke Level Model (KLM) and Goal-Operation-Method-Selection Model (GOMS).

KLM is a “fast and approximate way to compute how long users will take to perform a task” (Ritter, 293). GOMS is “an approach that attempts to specify the details of error-free, expert behavior, and to use the specification to predict learnability, usability, and time to execute the tasks being modeled allowing that multiple strategies may be used for similar tasks” (Ritter, 289). We are comparing the times completed by the user to the KLM and GOMS models to examine the effectiveness of the website’s current design. We selected the websites based on a group member’s frustration with finding information on the two websites.

Task and Analysis of the Task
The three tasks we found to be most important on the DiscipleMakers website were giving donations, finding information regarding staff members, and registering for conferences. We found these three tasks on the DiscipleMakers website to be most important because the students that are part of the Christian fellowship, or who are interested in joining, use these three features the most. One of our group members, Layman, is the president of the student executive committee for DiscipleMakers, so through her access to DiscipleMakers Google Analytics account we were able to see that these three tasks were among the highest volume of page views on the main website.

We also analyzed three tasks from the staff website (shown in Figure 5). These tasks were accessing the events calendar, emailing technical support, and registering for staff conferences.
We found these three tasks on the DiscipleMakers’ staff website to be most important because the staff members employed with DiscipleMakers utilize these three features frequently (as documented in DiscipleMakers’ Google Analytics account).

![DiscipleMakers Staff Website](http://staff.dm.org)

**Figure 5.** A screenshot of DiscipleMakers’ staff website. (http://staff.dm.org).

First, we completed the Goal-Operation-Method-Selection-Model (GOMS) for each of the above tasks. GOMS is a more complex version of KLM. The components of GOMS are the desired state of affairs (goals), elementary perceptual, motor or cognitive actions (operators), procedures for achieving goals (methods), and the basic control structure of the model (selection rule).

Next, we began the analysis by completing Keystroke Level Models for each of the above tasks. The first step in KLM is to break the tasks down into specific steps that are needed to complete the task. Included in the steps are tasks such as mental preparation (M), pointing the mouse (P), clicking and releasing the mouse (B), and hand to keyboard or mouse (H), etc. Each of these steps has been assigned a completion time. The sum of all of the steps is the total predicted time for the task, based on the KLM. Once each task has a predicted time we tested our subjects on their actual completion time for the same task.

**Data Gathering**

We implemented specific rules for each of the subjects. The same three subjects were used to test both websites. They were undergraduate students at the Pennsylvania State University. All three subjects were female in gender and lived in the same building. This was chosen as a matter of convenience and because the group member running the experiment was also female. They were all native English speakers. Each subject was tested one on one in a private setting. This was done to minimize outside distractions. They all had experience using computers and navigating websites (all were novices). All three subjects were experienced Windows 7 operating system users. None of the subjects were in computer related majors or minors. All three subjects were right handed. This feature was purposefully required for each subject because they would be using a mouse designed for a right handed person. All subjects had
normal or corrected to normal vision. If the subject had corrected vision, the group member running the experiment made sure that their corrected vision was implemented, so that their vision would be optimal.

To gather the subject completion times for our tasks, the subjects were given a computer already on the Disciple Makers' homepage. The computer we used was a Dell Studio XPS with a Windows 7 operating system. The group member testing the subject also had a Dell Studio XPS computer with a JavaScript stopwatch, located on acs.ist.psu.edu website, to use as a timer. The computer that the subjects used had a Logitech mouse connected to it. The power options on each computer were configured to have the display never dim or shut off. Both computers also had background programs closed or blocked so that no unrelated screens or notifications would deter from the experiment. The internet on both computers was accessed through the Penn State wireless network.

The subject was read the particular task and the timer was started. The timer was stopped when the final KLM step was reached; whether it be reading the information or clicking on the appropriate link. The subjects were told by the group member running the experiment to look away from the screen after they completed a task. The group member running the experiment then reset the cursor in the bottom right hand corner. These steps were then repeated for the other five tasks. After the third task was completed, the experimenter changed the website to the Disciple Makers' staff website so that the last three tasks could be tested. The group member running the experiment, Layman, works for Disciple Makers as an intern staff member and therefore has access through username and password to the staff website. This group member monitored the user closely to make sure that she did not click on links with sensitive privileged information.

All three subjects received identically worded prompts from the group member running the experiment. The instructions given to each of the subjects are as follows (word for word):

For the Disciple Makers' webpage (www.dm.org):

- Before beginning the experiment: “We are conducting this experiment on task analysis for our IST 331 class on human system interactions. You will be tested on how long it takes you to find different items on two different websites. Your input will be analyzed and used to complete our analysis. Some of the questions in the experiment will be timed. The timer will be started once I say ‘go’ and the website is visible to the you. The timer will stop when you complete the task correctly, as stated in the questions. Work as quickly and as accurately as possible. The timing is done to help us better analyze our results to compare the different websites. NOTE: If the answer is wrong the instructors will say ‘no’ and at this time you should continue to find the correct answer elsewhere on the website.”

- Before they start the first task: “When I say ‘go,’ look at the screen and locate the ‘Giving Form’ for donations on the website. Once you find the link, click on it and say ‘done.’”

- Before they start the second task: “When I say ‘go,’ look at the screen and locate the registration page for the Focus conference on the website. Once you find the link, click on it and say ‘done.’”
Comparison

For each of our sites the actual and predicted times varied. For the Disciple Makers’ website that is accessible to anyone, some of the tasks were completed faster than predicted, while others took longer than the estimated times. The first task we gave the subjects was to find and open the giving form PDF file because this is the only way to donate to Disciple Makers. The predicted time using KLM for this task was 11.85 seconds shown in Table 1 below. We tested three subjects and all of their times were above our predicted time to complete the task. Due to the subjects’ times to complete this task, we can say that website design could be better designed to make accessing this information quicker and more efficient for the users.

<table>
<thead>
<tr>
<th>Task</th>
<th>Predicted</th>
<th>Mean</th>
<th>Subject 1</th>
<th>Subject 2</th>
<th>Subject 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Find Staff Info – dm.org</td>
<td>8.800</td>
<td>8.338</td>
<td>5.883</td>
<td>11.970</td>
<td>7.162</td>
</tr>
<tr>
<td>Register for Focus – dm.org</td>
<td>13.20</td>
<td>10.860</td>
<td>10.680</td>
<td>10.590</td>
<td>11.380</td>
</tr>
<tr>
<td>Access the Calendar – staff.dm.org</td>
<td>4.400</td>
<td>2.414</td>
<td>1.911</td>
<td>3.539</td>
<td>1.793</td>
</tr>
<tr>
<td>Register for Conference – staff.dm.org</td>
<td>7.450</td>
<td>31.410</td>
<td>8.649</td>
<td>66.840</td>
<td>18.770</td>
</tr>
</tbody>
</table>

Table 1. A display of the individual subject times to complete each task. These times are compared to the predicted times using the Keystroke Level Models that can be found in Appendix A. (All of the times are recorded in seconds).

The second task we gave to our subjects was finding information regarding staff members. This task was completed by the subjects on average slightly faster than our predicted KLM times.
The average for finding the staff information was 8.338 seconds, whereas the predicted time was 8.8 seconds. This shows that the staff information is easily accessible on the website.

The third task for the DiscipleMakers' website was to register for the upcoming Focus Conference. The predicted time for this task was 13.2 seconds; however, we later found that there are multiple ways in which to reach the register link. We noticed this when the subject completion times for task 3 were much shorter than the estimated time of 13.2 seconds. Perhaps this lower time was reached because the subjects found a faster route to registering for the Focus Conference. Therefore, accessing the registration page for the upcoming Focus Conference, or any conference from DiscipleMakers for that matter, is a very easily accessible area of the website.

When concerning the DiscipleMakers' staff website, this website is only accessible to staff members through login information. The user needs a username and a password to log onto the website. Therefore, when testing our three subjects on this website we made sure our three tasks they were required to find would not contain “sensitive” information that should only be viewed by the staff members. Our group had access to this website because one of our group members, Layman, is an intern staff member with DiscipleMakers. She has a username and password to gain access to this website.

Concerning the DiscipleMakers' staff website, the first task we gave the three subjects was to find and open the Event Calendar. The predicted time using KLM for this task was 4.4 seconds. All three of our subjects access the Event Calendar in less than four seconds. This shows that the Event Calendar is easily accessible to the staff members on this website.

The second task we gave the three subjects was to register for the Summer 2012 Staff Conference (they were not actually going to register but they were required to get as far as logging in to register). The predicted time using the KLM for this task was 7.45 seconds. All three of our subjects registered for the staff conference in above 8 seconds. Two of the subjects even took over 18 seconds to find the registration for the staff conference. These results show that the website design could be better designed and organized to make accessing this information quicker and more efficient for the users.

The third task we gave the three subjects was to contact technical support on the DiscipleMakers' staff website. The predicted time using the KLM for this task was 11.85 seconds. All three of our subjects were able to contact technical support in less than 11.85 seconds. Therefore, this shows that to contact technical support is easily accessible to the staff members on the website.

**Conclusion**

After completing this task analysis we have a few suggestions for the designers of the DiscipleMakers' websites. First, concerning the DiscipleMakers' staff website, we would suggest that the designers create a way for users to have one defined way to access areas on their website. We would also suggest that the website designers create a better layout for the homepage of their website. The font size and color choices of the website make it more difficult
to locate what the user is trying to find. This was proven by the times recorded in Table 1 above and also by the way the users had a difficult time performing the tasks they were given.

**Perception Analysis**

**Introduction**

Our group ran a perception interaction analysis of the DiscipleMakers’ main website. We chose the less straightforward way of running the analysis by coming up with stimuli where perception is important and that it related to the rest of this report.

The average individual does not spend a great deal of time analyzing features of the websites that they browse. They mostly do not give the fonts a second thought unless the size is extremely large or small, or if the spacing makes the readability decrease. The colors, as well, are not given much consideration unless they clash with the font or other colors, or if the colors distract the user from the reason they came to the web site in the first place. According to usability.gov: “Users make judgments of the visual appearance of a website very quickly and those judgments are very consistent over time” (Chen). So, why does it matter what the features of a website look like? It is our goal to explore reasons why it matters, as well as investigate what a user perceives as they analyze specific areas of different websites. More on the actual details and specifics of the experiment can be found in the Methodology section.

**Methodology**

For our perception experiment we had five subjects analyze two different Penn State Christian organization websites. The websites we chose for our subjects to analyze were DiscipleMakers non-profit in State College (http://www.dm.org) and Penn State Cru (http://pennstatecru.org). We chose these two websites for our experiment because many non-Christian college students would be unfamiliar (in most cases) with a Christian fellowship’s website unless they possibly have explored clubs about the faith. This would allow for better results in our analysis because our subjects would be unfamiliar with navigating these types of websites. Another reason we chose these two websites was because of their proximity to each other in location. Both of these organizations are located in State College, Pennsylvania, and they both have a presence on the Pennsylvania State University’s campus. We assumed that these websites would be similar in certain ways because of their geographical location and the type of fellowship that they are (Christian). However, we also knew the layouts would be different because they are two different fellowships and they have different website designers.

Using Google Analytics, our group went through the list of the pages on DiscipleMakers’ main website that had the most views. We wanted to use this information to compare the most popular pages to the same pages on Cru’s website. We disregarded the first and third items on the list in Figure 6 because they were pages specific to the DiscipleMakers’ website. The total amount of page views of the top five most frequented pages on the website are 5,833 views.
Next, in choosing our subjects, we decided to keep fairly similar qualities within these people. We decided that they all should have the same major that was not necessarily "computer driven". We also created the requirement that our subjects not be color blind. We tested this by using a website that we found online called "Test for Colorblindness Online" (Waggoner). This test involved clicking through different color combination schemes to check for several types of color blindness. After completing this test we found that all of our subjects were not color blind. Having these requirements created a hypothesis for us for this analysis. Our hypothesis was that having the above requirements would provide better overall results in our analysis section because they do not interact with computers or the internet on a daily basis compared to students whose majors are strictly driven by computer use. As a result, the subjects would be less familiar with the structure and layouts of where certain items are generally located on a website.

Our experiment consisted of the following directions for the subjects to follow. Initially, they were required to read a brief we compiled before completing the experiment. While reading this brief and for the rest of the experiment, there was no other noise present in the room (ex. no music playing, no talking to one another other than related conversation to the experiment, etc.). Also, the only people present in the room during the experiment were the person conducting the experiment and the subject performing the experiment. The following brief was provided to the (five) subjects:

We are conducting this experiment on perception for our IST 331 class on human system interactions. Subjects will be tested on how users perceive websites in certain ways. Subject input will be analyzed and used to complete our analysis. The object of this analysis is to better understand the end-user and how they perceive different websites and tasks. Some of the questions in the experiment will be timed. The instructors will begin the timer once the website is visible to the subject. The timer will stop when the subject completes the task correctly, as stated in the questions. Although you are being timed, this is NOT a competition. A faster time does not necessarily mean you have better perception in this case. The timing is done to help us better analyze our results to compare the different
websites. NOTE: If the answer is wrong the instructors will say “NO” and at this time you should continue to find the correct answer else-where on the website.

After reading this brief the subjects were asked if they had any other questions before we started the experiment. In this case, no further questions were asked and we continued with the experiment. We created a PowerPoint presentation of questions for the subjects to answer while navigating the website. Some questions were related to the appearance of the website while some questions required the subjects to navigate the website. There were eight questions and the subjects were required to answer all eight of the same questions for the both websites. However, we had two separate PowerPoint presentations for each Christian website to avoid confusion for the subjects. Below, in Appendix C (Figures 11 and 12) are the questions we asked our subjects.

Finally, for running the experiment, we set up two laptops beside each other for the subjects to use. One laptop was used to navigate the websites while the other laptop was used for the PowerPoint presentation. The experiment conductors controlled the computer that had the PowerPoint presentations and the stopwatch. In this perception experiment, we tried to eliminate as many variables as possible. For example, we made sure that we used two Dell brand laptops. We did this to ensure that the interface and operating system would be similar. We also made sure that the screen resolutions were the same on both screens. The screen resolution we used was 1280 pixels by 800 pixels. Also, the brightness of each laptop display was set to the highest setting.

For some of the questions in the experiment the subjects would be timed to see how quickly they could navigate the websites to find certain items we asked them to find. To record a precise time of the subjects’ navigation, we used the “JavaScript stopwatch” provided to us on the Penn State IST Applied Cognitive Science Lab website (RUI-Recording User Input). This stop watch provided us with time in milliseconds. In the following section we will discuss and analyze these results.

**Analysis of Results**

Within the five subjects we had a variety of answers for each question. There are some similarities but there are also some disagreements in the websites layout. First, we started with Penn State Cru’s website. Below, in Figure 7, is the picture of Cru’s main page of their website.
The first question we asked the subjects was concerning the layout of the page and what the users liked about it. All five subjects thought that the layout was intuitive and organized in an understandable manner. Question two was a timed question. We asked our five subjects to find the Events page on Cru’s website, and when they found it they were asked to click on it. The time required to find the Events page for Cru is related to the usability of the website. The five subjects took an average of 2.282 seconds to locate Cru’s Events page. This average was calculated from the times displayed in Table 2. Question three was related to the color scheme of the website. The five subjects disagreed on the overall color scheme of this website. Three of the subjects thought that the color scheme was fine and the colors complimented each other. The fourth subject thought that the color scheme worked well for the site, but that it was boring to look at. The fifth subject thought that the grey with the white text conflicted with each other. Question four was a timed question. The subjects were required to find the staff’s About Us page and to click on it. The five subjects took an average of 3.853 seconds to locate Cru’s About Us staff page. This time shows that it was only slightly harder to find the staff About Us page than it was to find the Events page. One of the subjects took slightly longer than the others to find this page. This was due to the subject accidentally clicking on the wrong link at first, and then going back to the main page to select the correct link. Question five was related to the font of the website. All five subjects thought that the text was easy to read, but the font size could have been increased a little bit for better readability. Question six was a timed question. The subjects were required to find the About Us (regular, not staff) page and click on it. The five subjects took an average of 3.589 seconds to find Cru’s About Us page. The fifth subject took less time than all of the other subjects because they did not seem to hesitate at first to look for it like the other subjects. It appeared to be more intuitive to that subject. Question seven was a general question. The subjects were required to rate the website’s overall appearance on a scale of 1 to 20. 20 being the most appealing website they have ever seen and 1 being the least appealing.
appealing website they have ever seen. You can see how the five subjects responded in Table 3. Question eight was another general question. The subjects were required to rate the website’s overall usability on a scale of 1 to 20. 20 being the easiest website the user has had to navigate and 1 being the hardest website they have had to navigate. The five subject’s ratings are displayed in Table 3 below.

<table>
<thead>
<tr>
<th>Events</th>
<th>Subject 1</th>
<th>Subject 2</th>
<th>Subject 3</th>
<th>Subject 4</th>
<th>Subject 5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2.712</td>
<td>2.946</td>
<td>1.144</td>
<td>1.995</td>
<td>2.612</td>
</tr>
<tr>
<td>About Us (Staff)</td>
<td>3.434</td>
<td>6.519</td>
<td>3.717</td>
<td>2.802</td>
<td>2.795</td>
</tr>
<tr>
<td>About Us</td>
<td>4.011</td>
<td>3.727</td>
<td>4.933</td>
<td>3.332</td>
<td>1.944</td>
</tr>
</tbody>
</table>

**Table 2.** The data collected from testing the five subjects on how quickly they could locate the different links on Penn State Cru’s website. (All of the times are recorded in seconds).

<table>
<thead>
<tr>
<th>Appearance Rating</th>
<th>Subject 1</th>
<th>Subject 2</th>
<th>Subject 3</th>
<th>Subject 4</th>
<th>Subject 5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>16</td>
<td>14</td>
<td>12</td>
<td>16</td>
<td>15</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Usability Rating</th>
<th>Subject 1</th>
<th>Subject 2</th>
<th>Subject 3</th>
<th>Subject 4</th>
<th>Subject 5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>16</td>
<td>15</td>
<td>14</td>
<td>16</td>
<td>15</td>
</tr>
</tbody>
</table>

**Table 3.** The ratings that the subjects gave Penn State Cru’s website (out of 20).
After we navigated Penn State Cru’s website, we moved on to DiscipleMakers website. Figure 1 displays a screenshot of their main page of their website. Below in Figure 8, is a screenshot of the About Us page on the main website.

The first question we asked the subjects was concerning the layout of the page and what the users liked about it. All five subjects thought that the layout was slightly less user-friendly and not as easy to navigate as the previous website (Penn State Cru). Question two was a timed question. We asked our five subjects to find the Events page on DiscipleMakers’ website, and when they found it they were asked to click on it. The time required to find the Events page for DiscipleMakers is related to the usability of the website. The five subjects took an average of 4.704 seconds to locate DiscipleMakers Events page. This average was calculated from the times displayed in Table 4. Question three was related to the color scheme of the website. The five subjects disagreed on the overall color scheme of this website. Three of the subjects liked that the text on the site was black with a white background, while the other two thought that the text should have been more colorful. Overall they all felt that there was too much white space and not enough color. Question four was a timed question. The subjects were required to find the staff’s About Us page (shown in Figure 8) and to click on it. The five subjects took an average of 10.254 seconds to locate DiscipleMakers About Us staff page. This time shows that it was much harder to find the staff About Us page than it was to find the Events page. One of the subjects took significantly longer than the others to find this page. This was due to the subject accidentally clicking on the wrong link twice, and then going back to the main page to search for the correct link. Question five was related to the font of the website. All five subjects thought that the text was easy to read, but the font size could have been increased a little bit for better readability. Question six was a timed question. The subjects were required to find the
About Us (regular, not staff) page and click on it. The five subjects took an average of 4.046 seconds to find Disciple Makers' About Us page. The first subject took less time than all of the other subjects because they did not seem to hesitate at first to look for it like the other subjects. It appeared to be more intuitive to that subject. Question seven was a general question. The subjects were required to rate the website’s overall appearance on a scale of 1 to 20. 20 being the most appealing website they have ever seen and 1 being the least appealing website they have ever seen. You can see how the five subjects responded in Table 5. Question eight was another general question. The subjects were required to rate the website's overall usability on a scale of 1 to 20. 20 being the easiest website the user has had to navigate and 1 being the hardest website they have had to navigate. The five subject’s ratings are displayed in Table 5 below.

<table>
<thead>
<tr>
<th></th>
<th>Subject 1</th>
<th>Subject 2</th>
<th>Subject 3</th>
<th>Subject 4</th>
<th>Subject 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Events</td>
<td>3.936</td>
<td>5.732</td>
<td>4.577</td>
<td>5.778</td>
<td>3.498</td>
</tr>
<tr>
<td>About Us (Staff)</td>
<td>8.908</td>
<td>21.126</td>
<td>6.251</td>
<td>7.632</td>
<td>7.355</td>
</tr>
<tr>
<td>About Us</td>
<td>2.276</td>
<td>6.916</td>
<td>3.553</td>
<td>3.341</td>
<td>4.143</td>
</tr>
</tbody>
</table>

**Table 4.** The data collected from testing the five subjects on how quickly they could locate the different links on Disciple Makers' website. (All of the times are recorded in seconds).

<table>
<thead>
<tr>
<th></th>
<th>Subject 1</th>
<th>Subject 2</th>
<th>Subject 3</th>
<th>Subject 4</th>
<th>Subject 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance Rating</td>
<td>12</td>
<td>10</td>
<td>9</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>Usability Rating</td>
<td>13</td>
<td>10</td>
<td>11</td>
<td>11</td>
<td>12</td>
</tr>
</tbody>
</table>

**Table 5.** The ratings that the subjects gave Disciple Makers' website (out of 20).

**Conclusion**

The main purpose of this analysis was to investigate what a user perceives as they analyze specific areas of different websites. As you read over the Analysis of Results section, you will notice that Penn State Cru’s website had the more user friendly and appealing website. Noam Tractinsky found, in his research on aesthetics in information technology, that “there is abundant evidence to suggest that aesthetics matters in almost every aspect of human thought and behavior” (Tractinsky, 17). We found that users have preferences of how a website's appearance. If one of the Christian organization websites in the State College area was difficult to navigate and unattractive to look at, there is a good chance that a user would give up on navigating through the site and search for a more appealing website. This could potentially cost the organization valuable publicity. According to Jennifer Chen of usability.gov, “There is no question that aesthetics can influence important factors related to online purchasing decisions such as attitude toward the company, credibility, and motivation. Emotion has played an important role in capturing and keeping the public’s attention in traditional marketing, and it will continue to play an important role for online companies that want to build a personable and trustworthy face on the internet” (Chen). This also applies to the Disciple Makers' website. We have been able to use the knowledge and feedback that we have gained from this perception analysis to aid us in looking for ways that the Disciple Makers' website can be improved. We feel that this analysis will definitely help boost their credibility. “Research has shown that the
typeface (i.e., font) that is chosen for a Web site convey mood, attitude and tone; and can impact the perception of a company’s credibility” (Furman). Our group is eager to use this research to see what we can do to help DiscipleMakers. As human computer interaction is explored in the future, more research should be done on the relationship between perceptions of aesthetics and usability so that more conclusive evidence will be available for website creators to use to their advantage.

Conclusion with Recommendations

Recommendation 1

After our group gathered information from Google Analytics for our Users Profile section, we recommend that DiscipleMakers continues to make use of Google Analytics. We also recommend that the entire Systems Department learn and become experts on how to use Google Analytics. We feel that this will strongly benefit the organization as a whole because the Systems Department will be able see how the websites are being access and they can use this information to target specific audiences that use the websites.

Recommendation 2

One of the conclusions that we came to through our Perception Analysis was that the color of the font and the contrast of it to the background was unappealing to the experiment subjects. They found the white background with black text to be boring and unexciting to read through. They seemed to enjoy the color scheme of Penn State Cru’s website better (See the Perception Analysis section).

Recommendation 3

A recommendation that our group has for DiscipleMakers main website homepage is to add an annotation to the main banner photo. Figure 9 shows an example of what this might look like. We feel that the current photos lack an understanding of the significance or importance. With the annotations it will provide first time users with a little more background into the events that people that are a part of DiscipleMakers participate in.

Figure 9. A screenshot of DiscipleMakers homepage banner with a suggested annotation for the photo.
Below in Figure 10 is what the present banner looks like. Currently, the user only sees a group of women standing around with no context or purpose besides smiling at the camera. By adding an annotation, it gives this photo a deeper meaning and we bring the user into an understanding of the organization more.

![Figure 10](image)

**Figure 10.** A screen shot of what DiscipleMakers’ homepage banner currently looks like without an annotation added.

**Recommendation 4**

Another recommendation that we have for the DiscipleMakers’ main website is that they replace the current pictures on the main banner on the homepage. The current pictures mostly contain clusters of people standing in a line side by side smiling at the camera (See Figure 1). It seems very posed and coordinated. We suggest that DiscipleMakers takes the same approach that Penn State Cru did by using mostly candid photos for their main banner that rotate every couple of seconds. The current banner on DiscipleMakers’ main page stays the same and only changes when the page is refreshed.

**Recommendation 5**

An additional recommendation that our group has for the staff website (shown in Figure 5 in the Task Analysis portion), is to make the color scheme consistent with the main website. DiscipleMakers’ main colors are blue and white, so it seems out of place to have green and tan in the staff website. Also we recommend that the font is increased in size to help different portions of the staff site stand out more to the user. Through our task analysis, we found that the staff website was difficult to navigate, so we would also suggest that the content on the main page be reorganized with less links clustered in one place.
Acknowledgements

Our group was given access to DiscipleMakers’ Google Analytics account by Brian Roberg (DiscipleMakers’ Webmaster) with permission by Tom Hallman (DiscipleMakers’ Systems Department Manager).

Correspondence with Brian Roberg and Tom Hallman was maintained by our group member, Layman, through email and in person conversation following Sunday worship service.

Layman, of our group, had the pleasure of interning with DiscipleMakers this past summer (2011) and will be interning again this coming summer (2012).

Dr. Frank E. Ritter, our IST 331 professor, for his suggestion to add annotation to images on DiscipleMakers’ homepage on their main website.
Appendix A: Keystroke Level Model

LEGEND
M - Mental preparation (1.35 seconds)
H - Hand from keyboard to mouse or vice versa (0.40 seconds)
P - Point the mouse to an object on the screen (1.10 seconds)
B - Button press or release (0.10 seconds)

For DiscipleMakersMain Website (dm.org):
Find Giving Options
Find entry link to DM page M
Point to link H P
Click and release on entry link B B
Find list of options M
Scan list of options M
Point to link to send a gift H P
Click and release on entry link B B
Find list of options M
Scan list of options M
Point to link for giving form H P
Click and release on giving form B B
5*M + 3*H + 3*P + 6*B
5*1.35 + 3*.4 + 3*1.1 + 6*.1 = 11.85 seconds

How to Register for Conference
Find event link on DM page M
Point to link H P
Click and release on event link B B
Find list of options M
Scan list of options M
Point to link focus H P
Click and release on focus link B B
Find list of options M
Scan list of options M
Point to register link H P
Click and release on register link B B
Read information on registering M
6*M + 3*H + 3*P + 6*B
6*1.35 + 3*.4 + 3*1.1 + 6*.1 = 13.2 seconds

How to Find Staff Information
Find join link to DM page M
Point to link H P
Click and release on join link B B
Find list of options M
Scan list of options M
Point to link to staff H P
Click and release on staff link B B
Read information on staff M
4*M + 2*H + 2*P + 4*B
4*1.35 + 2*.4 + 2*1.1 + 4*.1 = 8.8 seconds

For DiscipleMakers Staff Website (staff.dm.org):
Find Event Calendar
Find event calendar link on staff DM page M
Point to link H P
Click and release on Event Calendar link B B
Read information on Event Calendar M
2*M + 1*H + 1*P + 2*B
2*1.35 + 1*.4 + 1*1.1 + 2*.1 = 4.4 seconds

How to Email Technical Support
Find systems help desk link on staff DM page M
Point to link H P
Click and release on systems help desk link B B
Find list of options M
Scan list of options M
Point to email problems link H P
Click and release on email problems link B B
Find list of options M
Scan list of options M
Point to info@dm.org link H P
Click and release on info@dm.org link B B
5*M + 3*H + 3*P + 6*B
5*1.35 + 3*.4 + 3*1.1 + 6*.1 = 11.85 seconds

How to Register for a Staff Conference
Find staff conferences link on staff DM page M
Point to link H P
Click and release on staff conferences link B B
Find list of options M
Scan list of options M
Point to summer 2012 staff conference link H P
Click and release on summer 2012 staff conference link B B
3*M + 2*H + 2*P + 4*B
3*1.35 + 2*.4 + 2*1.1 + 4*.1 = 7.45 seconds
Appendix B: Goals-Operations-Methods-Selections (GOMS)

GOAL: DONATE TO DISCIPLEMAKERS
GOAL: FIND GIVE LINK
GOAL: SELECT GIVE LINK
  [select: GOAL: KEYBOARD-TAB-METHOD
   GOAL: MOUSE-METHOD]
VERIFY SELECTION
GOAL: FIND SEND-A-GIFT LINK
GOAL: SELECT SEND-A-GIFT LINK
  [select: GOAL: KEYBOARD-TAB-METHOD
   GOAL: MOUSE-METHOD]
VERIFY SELECTION
GOAL: FIND GIVING FORM
GOAL: SELECT GIVING FORM
  [select: GOAL: KEYBOARD-TAB-METHOD
   GOAL: MOUSE METHOD]
VERIFY SELECTION

GOAL: REGISTER FOR CONFERENCE
GOAL: FIND EVENT/FOCUS LINK
GOAL: SELECT EVENT LINK
  [select: GOAL: KEYBOARD-TAB-METHOD
   GOAL: MOUSE METHOD]
VERIFY SELECTION
GOAL: FIND FOCUS LINK
GOAL: SELECT FOCUS LINK
  [select: GOAL: KEYBOARD-TAB-METHOD
   GOAL: MOUSE-METHOD]
VERIFY SELECTION
GOAL: FIND REGISTER LINK
GOAL: SELECT REGISTER LINK
  [select: GOAL: KEYBOARD-TAB-METHOD
   GOAL: MOUSE METHOD]
VERIFY SELECTION
GOAL: SELECT FOCUS LINK
  [select: GOAL: KEYBOARD-TAB-METHOD
   GOAL: MOUSE METHOD]
VERIFY SELECTION
GOAL: SELECT REGISTER LINK
  [select: GOAL: KEYBOARD-TAB-METHOD
   GOAL: MOUSE METHOD]
VERIFY SELECTION

GOAL: FIND STAFF INFORMATION
GOAL: FIND JOIN LINK
GOAL: SELECT JOIN LINK
[select: GOAL: KEYBOARD-TAB-METHOD
GOAL: MOUSE-METHOD]
VERIFY SELECTION
GOAL: FIND STAFF LINK
GOAL: SELECT STAFF LINK
[select: GOAL: KEYBOARD-TAB-METHOD
GOAL: MOUSE-METHOD]
VERIFY SELECTION

GOAL: FIND EVENT CALENDAR
GOAL: FIND EVENT CALENDAR LINK
GOAL: SELECT EVENT CALENDAR LINK
[select: GOAL: KEYBOARD-TAB-METHOD
GOAL: MOUSE-METHOD]
VERIFY SELECTION
GOAL: SEARCH FOR EVENT CALENDAR LINK
[select: GOAL: KEYBOARD-TAB-METHOD
GOAL: MOUSE-METHOD]
GOAL: KEYBOARD-TEXT-ENTRY
GOAL: SELECT SEARCH
[select: GOAL: KEYBOARD-TAB-METHOD
GOAL: MOUSE-METHOD]
VERIFY SELECTION

GOAL: EMAIL TECHNICAL SUPPORT
GOAL: FIND HELP DESK LINK
GOAL: SELECT HELP DESK LINK
[select: GOAL: KEYBOARD-TAB-METHOD
GOAL: MOUSE-METHOD]
VERIFY SELECTION
GOAL: FIND EMAIL PROBLEMS LINK
GOAL: SELECT EMAIL PROBLEMS LINK
[select: GOAL: KEYBOARD-TAB-METHOD
GOAL: MOUSE-METHOD]
VERIFY SELECTION
GOAL: FIND INFO.DM.ORG LINK
GOAL: SELECT INFO.DM.ORG LINK
[select: GOAL: KEYBOARD-TAB-METHOD
GOAL: MOUSE-METHOD]
VERIFY SELECTION
GOAL: SEARCH FOR HELP DESK
[select: GOAL: KEYBOARD-TAB-METHOD
GOAL: MOUSE-METHOD]
GOAL: KEYBOARD-TEXT-ENTRY
GOAL: SELECT SEARCH
[select: GOAL: KEYBOARD-TAB-METHOD
GOAL: MOUSE-METHOD]
VERIFY SELECTION

GOAL: REGISTER FOR STAFF CONFERENCE
GOAL: FIND STAFF CONFERENCES LINK
GOAL: SELECT STAFF CONFERENCES LINK
[select: GOAL: KEYBOARD-TAB-METHOD
GOAL: MOUSE-METHOD]
VERIFY SELECTION
GOAL: FIND SUMMER 2012 STAFF CONFERENCE LINK
GOAL: SELECT SUMMER 2012 STAFF CONFERENCE LINK
[select: GOAL: KEYBOARD-TAB-METHOD
GOAL: MOUSE-METHOD]
VERIFY SELECTION
GOAL: SEARCH FOR STAFF CONFERENCE
[select: GOAL: KEYBOARD-TAB-METHOD
GOAL: MOUSE-METHOD]
GOAL: KEYBOARD-TEXT-ENTRY
GOAL: SELECT SEARCH
[select: GOAL: KEYBOARD-TAB-METHOD
GOAL: MOUSE-METHOD]
VERIFY SELECTION
Appendix C: Questions for Perception Analysis

Questions About the Christian Websites
Penn State Cru

DO NOT advance to the next slide until we say begin

Question 1
- What do you like about the layout of this page?
  - For instance, column layouts, headers, and dropdown menus.

http://pennstatecru.org/index.html - Penn State Cru

Question 2
- Find the “Events” link and click on it.

Question 3
- Do you like the color scheme?
  - Is there color contrast that bothers or helps the eye?
  - Is there anything on the website that makes it difficult to read because of the color chosen?

Question 4
- Find the “Staff About Us” page and click on it.

Figure 11. Questions 1 through 4 for the experiment. These are the actual PowerPoint slides used for the experiment.
Figure 12. Questions 5 through 8 for the experiment. These are the actual PowerPoint slides used for the experiment.
Works Cited (MLA Format)


