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Analysis of the PSU Rec Sports Website

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Analysis of the PSU Rec Sports Website

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Abstract:
The website we are proposing to analyze is the Penn State Intramural/Rec Sports website. We chose this site because it is a confusing website that we've all had to deal with before. If they choose to take our suggestions, it would be a real service to the Penn State community. On this website most users are seeking information about IM sports. Often times people are checking schedules for their IM team, league rankings, or seeking information on how to sign up for an IM sport. A few other features this site offers is ways to connect to IM sports and their calendars. Also it gives descriptions of IM facilities and places to work-out on campus.

This site is appealing because it is one that is actually used by our peers. We can actually change a website for the better. It is also one that we can help make more efficient. People come to this website for specific reasons. If we can help them find information quicker, then it is definitely a huge win for our team and the Rec Sports website. We've provided several improvements based upon multiple analyses of the website.
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Introduction

By Van McCarren

The Internet is a vast and often confusing world. Websites behave in different ways and have different purposes. Some can be use strictly for enjoyment, some are for staying in touch with friends, and others can be informative. However, a website is an interface. Free Dictionary Online defines an interface as a program that controls a display for the user (usually on a computer monitor) and that allows the user to interact with the system. The interface we have chosen to analyze is one that our team has interacted with many times in a given year. The PSU Rec Sports website is the official website of PSU Intramural sports and exercise facilities. The main goal of the site is to provide information about IM schedules, leagues, results, and things of that nature. We had contacted the Rec Sports office with an email found on their website and were put in contact with a woman Jennifer Lee who is in charge of maintaining the website. We quickly learned that Lee was by no means a web developer and had taught herself how to use Dreamweaver 20 odd years ago to build and maintain the site. This is important to note because the suggestions we make need to be something that is possible with the resources Rec Sports has available to them. The interface at http://www.athletics.psu.edu/recsports/ can be seen in Figure 1 below. We conducted 3 main analyses of the website. One analysis dealt with perception, one with how well a user learned to use the interface, and a task analysis.
Figure 1 shows a screenshot of the interfaces home page.

1 Perception Analysis

By Ryan Walker

1.1 Introduction

The second study our group performed on the perception of the website was the home or main page of the website and the material on it. The homepage of Penn State's intramural website has squares of upcoming event information in it. There are multiple squares with information inside them and each square has a different background color and a large picture in it representing the information. Our group found that this was very distraction and performed a study on this. Our group used the same 20 people used for the previous study.

1.2 Methodology

For this study we told all of the participants to open the intramural website and tell us what they notice first on the homepage. The method was really very simple. We were curious to see if it was images or words that were the dominant feature on the homepage.
1.3 Results

The results proved that the different background colors and pictures are very distracting. The survey showed that 13 of the 20 participants in the survey looked at the large pictures in the squares of information, 5 of the 20 participants looked at the background colors first and the remaining 2 participants looked at the Penn State logo first.

1.4 Analysis

In addition to the different colored backgrounds being distracting, the different colored backgrounds make it difficult to read the text in the different colored boxes. In our group's last survey we asked each of the 20 participants if they found the text hard to read or not due to the background color. The results were that 14 out of the 20 found the text difficult to read. This result is on track with what is mentioned in *Ergonomics of usability/accessibility-ready websites: Tools and guidelines*, "The term readability refers to all the factors that affect reading and understanding a piece of text. These factors include: the interest and motivation, page layout (e.g., foreground/background color, spacing between lines and objects), text affects (e.g., font typefaces, size and styles), among others, the quality of user's monitor as well as the actual composition of the website content." (Al-Badi, Ali and Balushi, 2012) With the same

The survey proved that the wildly colored backgrounds and big pictures grab the attention of the users' first and not the actual, useful information. Our group recommends that the background colors should be changed to more plain colors and the images should be altered so that the images are smaller or completely removed all together.

According to Banati, Bedi and Grover, there are six categories that are critical to a website function and usability. The six categories are efficiency, effectiveness, learnability, memorability, appearance of the site and satisfaction. By making the background colors different
and making the link text size not unison, the intramural website is violating one of the six major categories in website usability. Making some small changes to the side link text size and to the main page information blocks will help perception of the website. Those changes will create a more professional looking website while maintain the same functionality of the website.

2 Learning Analysis

By Kathryn Finley

2.1 Introduction

When looking at any website, it is important to analyze if the website is user-friendly. A website should be easy to understand and navigate.

One way to analyze the ease of use of a website is to conduct a study to determine how quickly users find certain items on the website. Our team felt that this would be the best way to test the Penn State Rec Sports website. We asked individuals to find the Intramural Spring 2012 Women’s Shot-put Champion on the site. We had each participant do this task fifteen times in order to gather enough data to plot a learning curve. This learning curve can be useful when designing a website as “it predicts how fast users will become with practice” (Ritter, Baxter, and Churchill, 144).

After analyzing the results of the trials, we determined that this website does, in fact, have a steep learning curve with the steepest part being between the first and second trials. Each user’s times generally got slightly faster after each trial.

2.2 Methodology

The methodology used in this experiment was simple and easy to repeat. First, we told the subjects that they were to find a particular person on the Penn State Rec Sports website. We
decided to tell our participants to locate Kate Sparks, the Women 2012 Intramural Track and
Field Shot-put Champion. The subjects were told to open the picture that Kate Sparks was in
and place their cursor on her. Each trial began on the Google homepage. From there, the
participants were told the name and event to search for, and then we started the timer. The timer
was stopped once the subject successfully placed their cursor on Kate Sparks in the picture. Five
different subjects performed this task fifteen times. We recorded and graphed the results as
shown below in Figure 1, Figure 2, and Figure 3.

2.3 Results

![Graph showing trial times](image)

**Figure 2-1** shows a graph that contains all of the trials completed in this study. Each line
represents a different subject and the times of all fifteen of his/her trials.
Figure 2-2 shows a graph of the average times for each trial.
Figure 2-3 shows a log-log plot of the trials the subjects completed that involved locating Kate Sparks on the Penn State Rec Sports website.

The results show that each subject did, in fact, have their own learning curve as shown in Figure 2-1. Each of these learning curves did prove to be relatively steep curves. There were a few outliers, but overall the subjects all generally improved after each trial as seen in Figure 2-2.

After collecting the data, we found that there were a few issues with our experiment. First, all of the subjects used their personal laptops; therefore we had different computers with different features, such as touch screens, and different operating systems, such as Mac vs. Windows. Also, the Internet speeds varied between the computers and therefore some subjects may have times that are all generally longer due to their Internet speed.
2.4 Analysis

After analyzing the results of the experiment, it is obvious that the data followed a trend. Our task of locating the picture of Kate Sparks proved to have a more rapid development of learning than we had anticipated.

After completing the first trial, the subjects were able to repeat the task without much difficulty. As shown in Figure 2-2, there was a rather steep slope between the first and second trials that the subjects completed. This shows that the participants were able to quickly learn how to complete the process. The slope of the curve gradually gets less steep as the number of trials increases. This shows that the subjects continued to learn and still improved their times during each trial. It is important to note that one of the main factors that most likely lead to the reduction of time during each trial is the fact that “errors decrease with practice” (Ritter, Baxter, and Churchill, 144). Therefore, as the number of trials increases, the number of errors decreases, and the time to complete the task decreases.

As shown in Figure 2-2, there are a few outliers of the learning curve. These outliers can likely be attributed to subjects making errors such as clicking the wrong link, Internet connection errors, or computer speed errors.

According to J. Bradley Morrison, “The central notion in earning curve theory is that accumulating experience leads to improved performance, or ‘learning by doing’” (Morrison). It is clear that our results followed this learning curve theory. Though there were a few outliers, the times generally followed a steep learning curve. This shows that with repetition, users will learn and complete a specific task each time they complete it. There was a steep slope in the learning curve between the first and second trials for each user, which shows that the subjects
quickly learned the task and were able to improve significantly after the first try. The users generally improved their time after each trial, but at a slower rate. If the slope of the learning curve had gradually decreased between all of the trials, it would show that the task is hard to learn. Therefore, this experiment proves that with practice, users will learn how to navigate to the picture of the 2012 Women’s Track and Field Shot-put Champion in shorter amounts of time.

With these results, we can begin to figure out how to redesign the Penn State Rec Sports website. After redesigning the page, we should test other common tasks on the website the same way we tested this task. Certain tasks, however, may require different types of learning curves. For example, a shallow learning curve allows both novices and experts to have a similar experience. On the other hand, a steep learning curve is, at first, harder for novices than experts. Therefore, it is important to consider that tasks that are completed often can have steeper learning curves, while tasks that are not completed as often should have shallower learning curves (Ritter, Baxter, and Churchill, 151).

3 Size and Placement Analysis

By Patrick Weiler

3.1 Introduction

Like the majority of web sites, the most common task a user needs to perform when they arrive at the Rec Sports page is to navigate and locate information. This site only provides an interface in which users can use to locate information. All registration, payments and modifications happen on third party pages. The ideal alterations for this site are ones that focus on navigation and layout. Users respond to simple, intuitive interfaces. When we reference the specifications laid out by GOMS we can conclude that there is no one way to create an intuitive interface, however there ways to create a cluttered, confusing interface.
While enhancing an operation by a matter of milliseconds what exactly come into play for the typical user on this site, it is still important to create a useable interface in which users feel comfortable and enjoy their experience.

Our first focus was on the homepage of the site, which can be referenced in Figure 1 above. It should be obvious to the user when they are the homepage, it creates a starting for user in their navigation process. This page does not exhibit that, it is cluttered with icons, photos and links; most of which are not necessary for the page or even the site itself. There is no clear direction of where the user should go once they arrive, the number of links is overwhelming and inconclusive. The homepage does enlarge the current season in order to draw more attention to it from the user. We ran a couple tests to see if this method would increase the users experience by allowing them to locate the current semester.

3.2 Methodology

In our Perception Lab we asked 20 users to log onto the Rec Hall page and locate either the Spring or Fall Semester, 10 located the Fall link and 10 located the Spring link. From there we timed how long it took them to click on the chosen link after arriving to the homepage. When comparing the data you can see that it is quite inconclusive. The first plot: Fall Trials v. Time plots the different amounts of time that it took each user to find the “Fall” link, also the larger link. The amount of time that varies between each trial varies very minimally because it was a very simple task.
3.3 Results

![Fall Trials v. Time](image1)

Figure 3-1

When reviewing the Spring data we see a very similar result. The variance is minimal because the task is so simple.

![Spring Trials v. Time](image2)

Figure 3-2

The only difference between the Spring and Fall task is that the Spring link is smaller and in theory more difficult to locate or click on. Our theory was that over time we would see an average click time of the Fall link fall below the average time of the Spring link. However, when you compare the average of two sets of data that is not the case. In a bar graph of average trial times, you can see that the Fall link is actually greater, but by less than 0.4 seconds.
3.4 Analysis

We can conclude that simply increasing the size of a more relevant link does not increase the usability. It does however create inconsistencies which can be distracting. The major flaw in this button is that Fall 2013 it is not the only relevant button. It is currently more relevant than Spring 2014 but there are other options that are equal to Fall 2013. There should be a more logical way to organize the links based on how often each page is accessed.

Organizing a site that is affected by time and seasons is difficult. Some pages need to be dynamic while others need to remain static. The best way to do this is to visually separate them so that the user will consistently go to the same place for a seasonal page even though that actual page will change.

By organizing the site into about 5 or 6 different sections that can encompass all the information, the page can walk users through their navigation as opposed to just throwing everything at them at once. It also creates a focus on the links and intuitively tells the user that the most accessed and important information lies in this area. A more problematic issue that is generated by cluttered interfaces is accessibility by unusual viewing displays. In W3C’s
guidelines of Web Content, they discuss the importance of accessibility from all methods of viewing. With a magnified or smaller viewing display, users lose contextual information and can become disoriented or lost. This can easily be avoided with reducing the amount of information on a page would not be a difficult change for the web designer because all it requires is a simple relocation of links. Nothing about the format of pages changes, only the way they are found.

Another easy way to increase information accessibility that applies to more than just the homepage is the contact information. A very common location for a web page to place information like this is along the bottom of the page. In Software Human Factors: The Responsive Web and Seven Principles of Universal Design, they discuss the difference between essential and nonessential information. This makes sense to a user because it typically does not play a role in the comprehension of the page, the contact information is more likely an alternative means of communicating with the hosting party as opposed to the website. In the Fourth Principle they clearly outline the concept of that information being kept separate from everything else. The Rec Page does emulate this, however the layout of it is not perfect. It is large and cluttered. By minimizing the font and tucking away the information, the contact info can sit discretely at the bottom of the page without drawing away any attention from the user. Therefore abiding by the non essential qualities laid out by Software Human Factors while still remaining separate. Again, this is an easy fix for the web designer to simply adjust the sizing and location of the text.

4 Task Analysis

4.1 Introduction

By Ryan Walker

The best websites on the Internet are the most efficient and easiest to navigate. The top websites allow the user to find the desired information off the website effortlessly and quickly.
For our group website analysis project our group, the King of Clubs, is analyzing Penn State’s recreational/intramural sports website. The main task for the intramural website is to provide information about student recreational sports events on campus and contact information about the intramural department and building.

For this task analysis lab our group is analyzing the two major functions of the website, sports event information and contact information. Our group asked each of our subjects to find a team’s volleyball schedule from this season and a phone number for the intramural building. When the subjects were finding their instructed information one of our group members would record the time and how efficiently the subject found the information. The task of finding particular information like contact information should be effect if the ‘information scent’ is correct on a website like noted in “Foundation for Designing User-Centered Systems” (pg. 207). The menu and buttons on the homepage of the intramural sports website should lead to information that is relevant or related to that menu title. If a menu has a ‘good scent’, the content is directly related to the menu topic but if the menu title is unrelated to the continent that it’s linked to, it’s said to have a ‘bad scent.’ A task of finding information via Penn State’s intramural sports website should be simple and easy to complete for users if the website has a ‘good scent.’

4.2 Methodology

By Van McCarren

The main task of the Penn State Rec Sports website is for people to find information about Intramural Sports and the Recreation buildings on campus. Our method for finding out how well the site performed was to have users find different items on the website. We had them find the Men’s Major Volleyball 2013 schedule and look up the Volley Llamas. We timed them
from the home screen until they clicked on the link for that schedule. We recorded the total time, the number of mouse movements and the number of clicks it took for them to get there. We had them also find the contact info for the Rec Hall equipment room.

Test subjects were all Penn State College Students. This pool is by far the highest percentage of users for the site. Some have used the site before some have not. This will give us a good representation of data.

We used a Keystroke level Model calculator to predict the amount of time and number of operators it would take to find the correct information that we asked our subjects to find. According to http://www.syntagm.co.uk/design/klmcalc.shtml the KLM prediction used 5 main components:

- K (0.2 s) – press a key or mouse button
- P (1.1 s) – point with mouse
- H (0.4 s) – home on keyboard, mouse or other device
- M (1.35 s) – mentally prepare
- R (t) – system response time (needs to be measured)

We entered the number of clicks, movements, mental operators, and system response times to get our predictions. We compared those with the actual times and operators the subjects registered. In the results section you can see the time predicted by the KLM Calculator. This time however does not include system response time. This calculation also assumes that the correct info is found without making any mistakes and is done so in a very efficient manner. It may take a subject multiple mental operators where we only predicted one for each screen. In the results is the most efficient prediction. After the subject finds the correct item, and all of their mouse movements and button clicks have been recorded. We decided to compare those
operators to the KLM model to see how close they lined up. We are assuming that the number of mouse movements is equal to the number of mental operators. Also it is important to keep in mind the KLM model does not account for System response time. The KLM model in most cases should be shorter than the actual time.

4.3 Results

![KLM calculation for finding the Volley Lama Schedule.](image1)

**Figure 4-1** above shows the KLM calculation for finding the Volley Lama Schedule.

![KLM prediction for finding the Equipment room contact info.](image2)

**Figure 4-2** shows the KLM prediction for finding the Equipment room contact info.

<table>
<thead>
<tr>
<th>Actual Time</th>
<th>Clicks</th>
<th>Mouse Movements</th>
<th>KLM Prediction</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Actual Time</td>
<td>Clicks</td>
<td>Mouse Movements</td>
<td>KLM Prediction</td>
</tr>
<tr>
<td>------------</td>
<td>--------</td>
<td>-----------------</td>
<td>----------------</td>
</tr>
<tr>
<td>4.1</td>
<td>2</td>
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<tr>
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<td>2</td>
<td>3</td>
<td>5.05</td>
</tr>
<tr>
<td>4.53</td>
<td>2</td>
<td>4</td>
<td>6.15</td>
</tr>
</tbody>
</table>

Figure 4-3 shows Volley Llama Schedule findings.

Figure 4-4 shows the Weight Room Contact Number findings.

4.4 Analysis

By Patrick Weiler and Kathryn Finley

Our results were actually very close to the time predicted by the Keystroke Level Model Calculator. This is not too much of a surprise given the simplicity of our site. The KLMC is focused on predicting straightforward, basic actions. Its purpose is to provide a high level overview of the length of a set of actions. Typically, some complicated mouse movements and actions would throw this prediction off.

Our process were very quick and basic without too many actions. Mostly just navigating a website and locating links. Because of that all the times were fairly low. We ran two different trials. The first was locating the schedule of the Volley Llamas, this required a bit of digging and took much longer. With about a dozen clicks finding the schedule took about 30 seconds. The prediction for each time was within 4 seconds of the real time excluding one outlier. A fairly accurate amount for the length of the process. The second operation was locating the phone number for the Rec Hall Equipment Room. This was a much quicker task with only 2 clicks.
about 4 - 5 seconds in length. The predictions were off by about 2 seconds and with such a short length in total that is fairly inaccurate. Each real time was shorter and that is due to the location of the links. Each click is performed within a very short proximity of one another which significantly reduces the total length of time.

In conclusion, our results show that the KLM Calculator predicted relatively accurate times. Even though it was originally assumed that the predicted times would have been shorter than the actual times, our website is very simple and easy to navigate. Therefore, users were able to navigate to the given links in an amount of time that was relatively close to the time that was predicted. This shows that the users most likely did not have to use any extra mental operators than we had predicted.

In respect to the analysis of the Penn State Rec Sports website, it can be concluded that the website is somewhat easy to navigate. On average, users were able to navigate to certain links on the site in almost the same amount of time that was predicted by a KLM Calculator which, in theory, should be shorter than the actual time. It took users about two to eight seconds longer than the time predicted by the KLM Calculator to find the Volley Llamas team schedule. Therefore, we can conclude that this item is relatively easy to find as it follows the idea that the KLM Calculator predicted time should be shorter due to system response times.

On the other hand, users were able to find the number for the Rec Hall Equipment Room in less time than that predicted by the KLM Calculator. Therefore, we can conclude that this item is very easy to find, and most likely can not be improved by very much. It is important to take note, however, that finding the number for the Rec Hall Equipment Room contained a significantly smaller number of mental operators, mouse movements, and mouse clicks which could be why this item was much easier to find.

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After looking at the KLM and the GOMS model (Appendix A), it can be concluded that the models give a relatively accurate prediction on how long it will take for a user to locate a link on the Penn State Rec Sports website. Though there still could be some improvements on the location of the links, it can be concluded that the site is easy to navigate.

**Conclusion:**

By Van McCarren

All of these studies have given us great insight into how people interact with the website. We’ve compiled a list of actionable items to help improve the interface.

1. Make color scheme consistent with both font and background color
2. Get rid of unnecessary widgets and images
3. Research which pages are most visited and make the paths to those pages the shortest possible
4. Make size of links consistent the same
5. Make links in a list rather than placing them mid-sentence
6. Utilize white open spaces.
7. Label lists more predominantly
8. Avoid using crossed out text and ... or ***
9. Avoid cluttered lists

We realize there are many different ways people interact with and use interfaces like this one. All users are different, but these suggestions should help make the website more efficient. After our analyses on perception, learning ability, and task analysis we feel like we have learned a great deal about how users interact with the site. More analyses would provide more feedback to help improve upon the site. Hopefully, our recommendations are taken into consideration to help improve upon the site in the future.
References:


Syntagm Keystroke Level Model Calculator http://www.syntagm.co.uk/design/kmcalc.shtml


Appendix A

GOMS

Locate Team Schedule for Volley Llamas under Men’s Major Volleyball

Method for goal: locate information

Step 1: Recall information from working memory

Step 2: Move cursor to relevant information

Step 3: Mouse click

Step 4: Make decision if information is accurate

Step 5: If accurate information is on page: goal accomplished

Method for goal: locate information

Step 1: Recall information from working memory

Step 2: Move cursor to relevant information

Step 3: Mouse click

Step 4: Make decision if information is accurate

Step 5: If accurate information is on page: goal accomplished

Method for goal: locate information

Step 1: Recall information from working memory

Step 2: Move cursor to relevant information

Step 3: Mouse click

Step 4: Make decision if information is accurate

Step 5: If accurate information is on page: goal accomplished
Locate Number for Rec Hall Equipment Room

Method for goal: locate information

Step 1: Recall information from working memory

Step 2: Move cursor to relevant information

Step 3: Mouse click

Step 4: Make decision if information is accurate

Step 5: Assure accurate information is on page: goal accomplished