Final Analysis of the Campus Concierge Application

April 23, 2012

7 of Diamonds:
Amanda Carvell
Michael Duong
Bryce Ligo
Everett Shea
Campus Concierge Analysis

Abstract

When designing an application, the users are the most important aspect to consider.

One of our group members has designed and created an application for iPhones, Androids and iPads. For our final project we decided to analyze his application to see if it was designed around the user. All along we have been running experiments and testing the application with random students. We found that the application could use some minor improvements in order to completely satisfy the user. These changes will increase the application's functionality and usability.
Table of Contents

1. Introduction .............................................................................................................. 4

2. Application Description .......................................................................................... 5
   Figure 1 (Login Screen) .......................................................................................... 7
   Figure 2 (Map-View Screen) .................................................................................. 7
   Figure 3 (Venue Check-In Screen) ......................................................................... 8
   Figure 4 (Venue Info Screen) .................................................................................. 8

3. Methodology .......................................................................................................... 9
   3.1 Perception ......................................................................................................... 9
   3.2 Task Analysis .................................................................................................... 10

4. Results ................................................................................................................... 11
   4.1 Perception ........................................................................................................ 11
      Table 1 (Style Errors) ....................................................................................... 12
      Table 2 (Color Errors) ...................................................................................... 12
      Figure 5 (Indigo Nightclub Screen) ................................................................. 12
      Figure 6 (Log-in Screen) .................................................................................. 12
   4.2 Task Analysis ................................................................................................... 13
      GOMS Model Usability Evaluation .................................................................... 14
      Table 3 (Timed Tasks by Users) ...................................................................... 15
      Table 4 (Expected Task times) ........................................................................ 15

5. Discussion .............................................................................................................. 16

6. Changes .................................................................................................................. 17
   Figure 7 (Login Screen: Before & After ) ............................................................. 18
   Figure 8 (Home Screen: Before & After) .............................................................. 19

7. Conclusion ............................................................................................................. 20

References ................................................................................................................. 22
1. Introduction

There are many aspects that must be considered when designing an application. Designers run into many problems when designing an interface because they try to compare themselves to whom the users will be, which may end up being inaccurate. In order to see if the Campus Concierge application is “user friendly” we tested it on some everyday users, Penn State students, through multiple lab experiments.

Our group has decided to analyze an application created by one of our group members. For the fact that our group member designed the Campus Concierge application, he can justify as to why he chose the design and method that he used. Knowing this will help us to understand his point of view but will also allow us to personally suggest what will make his application more user friendly. Our suggestions to him were based off of the results we got during the experiments we’ve conducted.

In today’s modern world, technology has become a major factor in everyday living. The World Wide Web is what started the sensation of websites. Today, every company, organization, school, etc. has a website. In our modern world though, websites are not the newest most technologically advanced way to provide information for users, applications are. Many people use the internet multiple times per day. Because of this, maneuvering around on websites is extremely important. A website’s design and layout makes all the difference to the user or customer when they are searching for specific information. Making important information easy to access is more difficult than one would think. Understanding users is the key to website design. In order to provide the best results to people, you need to understand the person first. This allows you to best fit their needs.
In order to provide the best results we decided to use all of the analysis methods used in previous labs. While exploiting the previous labs, we used our application as the study focus. Doing this has showed us what and where we need to devote most of our attention to on the application. From the previous labs we plan to include our GOMS results since we conducted the lab by having students find different important things on our actual application. We also included other results we got from a few evaluation methods that we’ve implemented.

2. Application Description

The Campus Concierge App is an all-in-one solution combining the benefits of Yelp (reviews), GrubHub (online food ordering), OpenTable (online reservations), Yellow Pages (directories), Ticketmaster (online ticketing), Groupon (online daily deals), and others all into one app just for major college universities across the nation. Adhering religiously to the lean startup/agile development process, each major feature listed above will be implemented in phases. The first iteration of the application will give both iPhone and Android users across the nation the ability to view a complete listing of nearby bars and nightclubs on a convenient map and/or list view with all the important venue information including: address, phone number, and hours of operation.

The app features real-time party information with gender ratio breakdowns, check-in data, dynamic ratings and happy hour specials for each venue every night of the week. The Campus Concierge app will also offer incentives rewarding users for every check-in. Users of the new app will also be able to share check-in information with other social networks such as Twitter, Facebook and Foursquare. In addition, users can interact with other users at any
venue, regardless of location, via the Live Stream chat feature. Universities not currently listed can be requested through the Campus Concierge database system.

The second version of the app will add on real-time deals and GPS deals, an innovative take on the Groupon model of daily deals. The way real-time deals will function is allowing restaurants to create a special/deal and then instantly push that deal out, in real-time, to all users who have the Campus Concierge app. If a user so chooses to take up the offer, he or she would venture to that establishment and redeem the deal directly on their phone by showing the relevant deal screen. GPS deals function similarly, with the difference being that users must have the app open/running and their GPS location services enabled in order to get deals pushed to them as they enter certain establishments’ radii. Not only do students benefit by saving money, but also businesses can upgrade their promotions tactics, track ROI, and reach a broader audience to meet the expectations of this rapidly changing and connected mobile world we live in.

In version 3.0, Campus Concierge will introduce a mobile food ordering platform on the app allowing users to place delivery or take-out orders directly from their phone. To distinguish apart from competitors, a nice side feature is the optional ability of tracking your food in real-time from the time you order it, to the time it arrives to your door. Or if you prefer to pick up your food, you can also track how long it will take to come in to pick up your food from the establishment. As an added bonus, a SMS (text message) can be sent to the customer’s cell phone letting them know when their food is available for pick up.
Essentially that is a one year product development roadmap. We’ve created these next slides to describe and thoroughly explain the process of using this application in its current state (version 1.0).

**Figure 1**

![Image of login screen](image)

**OUR LOGIN SCREEN.**

Users go through our 30-second sign up process to get an account with Campus Concierge. We got rid of Connect using Facebook because Facebook’s authentication tokens require users to authenticate every 2 hours. Offline tokens are a possibility but we have the risk of the user logging out of their Facebook app and therefore won’t be able to login to CC app unless they login to Facebook first.

**Figure 2**

![Image of map view screen](image)

**MAP VIEW SCREEN.**

The first screen the user will see after they check in. Their GPS (if enabled) will pinpoint their approximate location and show nearby venues with the default zoom radius of 500 feet. By clicking on a pin, the user can see a real-time rating of that venue based on our ranking algorithm.
**VENUE CHECK-IN SCREEN.**

This is the first screen the user will see after they pick a venue on the app. If they are not within the vicinity of the venue (50 feet), they will not see this screen and instead will see the live stream screen instead. The user also has the ability to share the check-in to Facebook and Foursquare.

---

**VENUE INFO SCREEN.**

This screen lists important information on the venue including address, phone number, hours of operation, and a Google map integration zoomed into 100 feet. Reviews aggregated from Yelp will also be included at the bottom for users to read about what to expect with that venue based on Yelp users.
3. Methodology

We conducted multiple experiments consisting of task analysis, perception, and behavior. All of these experiments allowed us to get a better understanding of the user, in order to suggest changes for the application. We will explain what we did during these labs that helped us understand the user more. Then through discussion, we will explain changes we suggested and why, in our conclusion.

3.1 Perception

The first experiment we conducted was to prove that font and color affects readers. Within the application there are a few interfaces that one could argue are hard to read. Font and color are both problems with these application user interfaces. In order to indicate that these interfaces could be improved we decided to test them on everyday users, being students. We asked four students to try and read what is presented on figure 1 below from a page of the Campus Concierge application. We also asked for them to look at the colors in figure 2 below. Figure 2, the check in now page, mostly relies on colors to distinguish the difference between males and females that are currently at that specific location. Figure 1, The Indigo Nightclub page, list details about the club with a small font which the color of the font is close in color hue to the background. The font itself barely has any space in between each letter causing the letters to blend together. This test resulted in positive proof that the user interfaces need to be changed in order to better satisfy its users.

In order to measure usability testing we are going to look at task times and errors the user conducted while using the application and other various websites. This allows us to have a non-bias answer about the user since we are testing them on other websites and applications.
3.2 Task Analysis

The second lab experiment we conducted was on task analysis. Every time a person tries to find a specific topic or result on a website, they are performing a task. A task is defined as “a usually assigned piece of work often to be finished within a certain time” (Task). With most websites it takes multiple steps in order to find what the user is looking for. This takes time and energy. Unfortunately with most websites it can take more time than intended for the user to find what they were looking for.

In order to improve the application, our group has decided to run an experiment with 4 students. These students are majoring in IST; therefore, they are not particularly random. We realize that our results may be wrong for the fact that students who major in IST are familiar with a computer and maneuvering around on websites/applications. We chose IST majors because if the results are bad for these students then we know the application needs major improvements.

In our experiment the user tried to find 3 important features of the application. Our subjects did this by using an Iphone 4s with the application already downloaded on it. First, we had each user connect their Facebook account to their Campus Concierge account. Second, we had each user lookup Indigo nightclub to get its address. Last, we had the user find where you could see the live stream of people talking through the application whom are at Indigo. In order to perform these tasks it is assumed that the user already has an account with Campus Concierge and has successfully logged in. The tasks were also performed one after another without returning to the main hub screen. We used an average of what it took ourselves to
accomplish these task and created a predicted time it would take the users to perform each task.

To perform this task we decided to use a task analysis model called GOMS. GOMS uses a pseudo-code to break down the task into recursive functions that allow for errors to occur (Book resource). In our task the user is trying to find important information pertaining to the application. This information is important therefore every millisecond counts that goes towards finding it. GOMS attempts to specify the details of error-free, expert behavior (Williams, p. 2). GOMS uses these specifications to predict the user’s ability to learn the task and to use it.

4. Results

4.1 Perception

The results from our first lab where we tested user perception showed us that the readers took a long time to read over simple words and phrases that should have taken half the time to brush through. The users also made errors and all of them squinted showing that the fonts, font styles, and colors all made it difficult for the reader to easily look through the screen shots. Table two dealt with the user reciting the text on the screen that had different fonts, colors, sizes and locations. The slower time we got back matched together with the amount of errors showed us a multitude of design flaws that needs to be tweaked to increase user performance. The category in Table 1, called Color Problems, was a question asked to the users after they had read through figure 5. Most of the users also highlighted the same fact of the male and female colors both being a darker color which was hard to distinguish from one another.
Table 1

<table>
<thead>
<tr>
<th>Student #</th>
<th>Time to read Figure 3</th>
<th>Errors</th>
<th>Squinting?</th>
<th>Color Problems?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>32 sec.</td>
<td>2</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>2</td>
<td>29 sec.</td>
<td>1</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>3</td>
<td>35 sec.</td>
<td>2</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>4</td>
<td>28 sec.</td>
<td>2</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Table 2

<table>
<thead>
<tr>
<th>Student #</th>
<th>Time to read Figure 4</th>
<th>Errors</th>
<th>Squinting?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1 min. 22 sec.</td>
<td>2</td>
<td>Yes</td>
</tr>
<tr>
<td>2</td>
<td>1 min. 35 sec.</td>
<td>1</td>
<td>Yes</td>
</tr>
<tr>
<td>3</td>
<td>1 min. 42 sec.</td>
<td>2</td>
<td>Yes</td>
</tr>
<tr>
<td>4</td>
<td>1 min. 33 sec.</td>
<td>3</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Figure 5: Indigo Nightclub

Figure 6: Check-in Screen
4.2 Task Analysis

We’ve obtained a multitude of results from our experiment. As we expected, the users took a bit more time to accomplish the tasks we laid out for them. Although most of us have only used the application once or twice because of its recent release, we still may have been more fluid with where things were located than our subjects who were using the application for the first time.

These results show that our users took a larger percentage of time to accomplish the tasks then we had previously conceived. This may have occurred through factors such as being first time users, the buttons not being where the user anticipated them (due to preconceived notions from other apps), and lag time due to a signal coverage. As seen in table 4, our results varied quite significantly in percentage from what we were expecting the averages in table 4 to look like.

We also found there were errors made by our subjects in spelling and in hitting the wrong button which caused them to have to backtrack, costing them more time. This also could be in a design failure, either by making the icon too small or placed in a way where the user had to search for it.

When using GOMS goals are the end states that must be successfully achieved in order to accomplish the task. In order to achieve this goal, many sub-goals need to be achieved as well. Some of those sub goals would be to not have any errors or “mess ups” while trying to perform the task. Achieving these sub-goals allow you to perform the task correctly. Operators are the task actions that must be performed to attain a goal or subgoal. Methods are sequences of these operators used to accomplish a specific goal or subgoal (Williams, p.3). Methods that
our subjects used were to have both hands on the iPhone which allowed them to use both of their thumbs. They found using their thumbs kept the phone steadier resulting in fewer errors.

**GOMS Model Usability Evaluation**

Method for goal: Link Campus Concierge account with Facebook account

Step 1: Recall information based on previous app experience (i.e. Instagram, Foursquare, etc.)

Step 2: Accomplish goal: seek button to connect Facebook account

Step 3: Compare information with requirements in working memory: move to Profile tab

Step 4: Accomplish goal: scroll through Profile tab

Step 5: Return with goal accomplished

Selection rule set for goal: search through Profile tab

If information is not verifiable on Profile tab, then

accomplish goal: locate FAQ

If information is verifiable on Profile tab, then

return with goal accomplished

Method for goal: Look for Indigo Nightclubs’ address (Find information)

Step 1: Recall information from working memory: Start at app home screen

Step 2: Accomplish goal: move to information (Bars → Indigo Nightclub)

Step 3: Compare information with requirements in working memory

Step 4: Accomplish goal: click on Info tab within Indigo Nightclub venue screen

Step 5: Return with goal accomplished

[1] Assuming each student owned a Facebook account (which they did)
Method for goal: Find Indigo Nightclubs’ live stream (move to information)

Step 1: Determine if information is on the screen

Step 2: Decide: if information is on the screen, then return with goal accomplished

Step 3: Decide: if there is more text outside of viewing area, use finger gestures to swipe up/down screen

Step 4: Decide: if there is no more text to read on screen, then return with goal accomplished

Step 5: Go to Step 1

The GOMS usability test above shows the three different tasks we set before users. We first timed ourselves and took an average to make our expected times for users, as shown in Table 4. We then timed each user individually. Their results are displayed in Table 3. The results we obtained showed that our users were a lot slower than anticipated. This could of been from a multitude of reason due to our previous use with the app, glare on the screen, and our knowledge with smart phones. The underlying fact though was that percentage timewise, our users were taking an exorbitant of more time which showed we needed to look into changing our screens style and feel to make it more user friendly.

Table 3:

<table>
<thead>
<tr>
<th>Student #</th>
<th>Task 1</th>
<th>Task 2</th>
<th>Task 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>45 sec.</td>
<td>23 sec.</td>
<td>12 sec.</td>
</tr>
<tr>
<td>2</td>
<td>52 sec.</td>
<td>35 sec.</td>
<td>15 sec.</td>
</tr>
<tr>
<td>3</td>
<td>48 sec.</td>
<td>39 sec.</td>
<td>14 sec.</td>
</tr>
<tr>
<td>4</td>
<td>47 sec.</td>
<td>32 sec.</td>
<td>18 sec.</td>
</tr>
</tbody>
</table>

Table 4:

<table>
<thead>
<tr>
<th>Task 1</th>
<th>Task 2</th>
<th>Task 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expected time</td>
<td>38 sec.</td>
<td>20 sec.</td>
</tr>
</tbody>
</table>
5. Discussion

The results that we have attained prove that font and color do affect the student’s ability to read. Good design decisions don’t advertise themselves, only bad decisions do. This is clear with the application we are critiquing. The average person would not notice a bad design if it were not hard to read or comprehend. To the person designing the user interface if they do not have any handicap abilities than their interface is prone to have a bad design.

In Earl Misanchuk’s Learner Preferences for Typeface and Leading in Print Materials, he describes how much of a different font type and font size make to the user. His results showed that even Times New Roman, one of the most commonly used fonts, users in a blind test preferred it the least to the other fonts that were involved in the study. This shows how most designers are not in tune with what a user wants, how important readability is and how important it is for a user to like a certain typeset and size.

Our task analysis was ultimately affected by how well the user can find the information they are looking for in the quickest and most accurate amount of time. The GOMS model does have its disadvantages because of how ambiguous it may be with not having rules in creating steps and how it does not account for the different levels of reasoning and or problem solving skills of the user (Chmil). Although there are limitations to the GOMS model, with the data gathered and the analysis in interpreting the results, we can determine the skew between the expected time and the actual time it took to perform the task were not radically different. This information is extremely resourceful in determining how many alterations must be made to the application to develop one that is most versatile to the common user.
6. Changes

There are several of many changes done to the iPhone application. The login screen used to be cluttered with too many buttons that would distract a new or returning user. We cleaned it up by simplifying the login process with just two text fields and one button to sign up. In regards to the home screen, the previous version lacked one and several users noted that they felt there was another screen they needed to go back to in order to reach the “central” part of the app. We changed the color scheme completely so that it would be easier on the eyes for users (especially at night) and lastly, we made the home screen simple so that everything was easily accessible and only one tap away.

Previously, the first version of the app was made to showcase the minimal viable product (MVP) which was the ability to see where the party hotspots were in real-time. This was accomplished through the check-in system which helps provide valuable data to calculate guy-to-girl ratio, approximate check-ins, and real-time venue ratings relative to other venues. After applying the GOMS method and findings from our perceptual interaction lab, along with concepts from the lean startup development cycle, we were able to iterate and redesign the user interfaces to match user experience expectations.

Giving the results of the analysis, we can provide some insight into how the application might be changed to better improve usability and functionality. In the analysis, we found that the icons coloring and size are received differently by each user and implementing a way to increase the size and contrast the colors with each other may provide better usability. In a functional aspect, we found that including the Facebook connect option, where the user signs up for Facebook or connects their existing account, in the signup process of the application will
provide the user with a better experience and give them more of a sense of the true purpose of the application with the social networking aspect.

Through all our findings, the logical decision was the change up the color scheme to better correlate the font and background contrasts and to take advantage of user’s smartphone’s LED backlighting. The immediate result? - whiter whites mixing with greys provided less eye strain on users under normal lighting conditions and during the nighttime. The next step was the clean up the user interface (UI) and improve user experience (UX). We started with changing the login screen (Figure 7). Before, the screen was too cluttered with no stand-out actionable button. We solved it by condensing everything and making the entire screen simple. Account info text fields were larger, bigger branding real estate (logo), and lastly a distinct call-to-action in the form of the large gold “Log In” button.

**Figure 7 Login Screen-Before & After**
Most importantly, users felt there was a missing element of a “home” screen, a place where they can start out at and always return to in order to get back to the beginning. With the previous version, there was a general consensus that the first screen seen upon opening up the app was “inadequate” and “lacking”. To fix this pain point, we designed a screen where everything was more streamlined, easily accessible, and a breeze to navigate. Each category was now articulate, clear, and neatly organized. From any screen within the app, one can easily return to the “home” or HUB screen as we call it. To further personalize the app according to the school the user is at, we also added a popular and discernible landmark associated with that university. Fittingly for Penn State, it was undeniable not to go with the famous Lion Shrine.

Figure 8 Home Screen - Before and After
7. Conclusion

It’s important to note that good user interface (UI) translates directly to good user experience (UX). With proper and common design cues, color schemes, and strategic button placement, a user can easily navigate effortlessly through a smartphone app they have not used before. Improper design mechanics make navigating apps and websites a hectic process which almost always results in low retention rates and negative user feedback.

Discovering the many different ways to improve the Campus Concierge application was our main objective of our research. The process of analyzing a user and their behavior can be complex and confusing to say the least. Each and every user is different from one another and also likewise with the designers and users. There is no one clear-cut way of developing an application or a website, but with the proper experiments and analysis, we may better understand the targeted user and their usage behavior for the application.

Throughout the experimentation process, we took a look at mainly behavior and perception characteristics of the user. In accordance to perception, we studied how font and color contrast affected the user, more importantly how they felt about different sizing, colors, and typeset. We discovered that a majority of the participants did not like the contrast between the font color and background color scheme on which the text was displayed. We also discovered how some users became frustrated with some of the layout of the screens because of the fact that what they were looking for was not where they commonly knew where to find such things; for example, a directory provides faster navigation instead of backtracking.
The improvements that will be implemented to the application came from much thought and analysis of each step of the process. To adhere to user’s feedback and results, changes such as a newer version of the login screen that implements new color and sizing of icon boxes. With the added improvements, the complexity of the application was decreased while increasing a more “user-friendly” aspect by implementing preferred colors and contrasts obtained from user testing. Finally, implementing an icon to easily navigate back to the “HUB”, or home screen, will improve functionality as well as usability.
Works Cited


