Scott Abromowitz / LBSC 708N / Design Workout 1

I pledge on my honor that I have not given or received any unauthorized assistance on this assignment/examination.

Benefits of Participatory Design : Design Workout 1

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Study Group: 1 WMATA employee (female)
1 University of Maryland first-year student (female)

Sample Strategy: Non-Probability – Went to people randomly

Attachments: Supporting documents are available under the folder titled "Supporting Documents." ELMS and WMATA questions with answers and documents for the study are listed in each described location in a folder titled PD. The PDF and docx format of this document are available in the general directory.

Keywords: ELMS, Participatory Design, WMATA, Metro, ticket machine, vending machine, non-probability sample

Synopsis: Brief class design project to illustrate the understanding of a particular design method. The option to pick two out of three user-groups was given. In this case, a WMATA person was asked to redesign the ticket vending machine while a University of Maryland student was asked to redesign ELMS, the University's student study portal.

Preface:

Two products and services that display frustrating and difficult user experiences are the Washington Metropolitan Area Transit Authority (WMATA) Metro ticket vending machines and the University of Maryland's Blackboard powered student powered called Enterprise Learning Management System (ELMS). The current WMATA's vending machines have been in service for over 12 years without any massive design changes; nonetheless, WMATA's current card vendor discounted manufacturing the cards recently (Tyson, 2010). WMATA must now find a vendor to create a new card system; consequently, the future vendor should take into account Metro riders' opinion on the current system and utilize such opinions to create a more effective system ("Metro - About Metro - News - Metro seeking next generation fare payment system," 2010). Similarly, OIT (Office of Information Technology) is unable to update ELMS because of software compatibility issues with Blackboard's program; therefore, OIT will likely phase out ELMS and replace it with a new service (Golbeck, 2011). In finding a suitable replacement, OIT should listen to user feedback and design ideas.

As such, in order to improve the user experiences of both products and services in their next design iterations, it is necessary to seek outside assistance and specifically from users. Designers of products may consider the particular product or service that they created to be adequate and easy enough to use for normal consumption; nevertheless, in the early stages of product testing, a particular product may be too complex for users to understand and may also be used in unexpected ways. Such an occurrence can be a cause for alarm and an indication that the designers need to modify the product. Bodker and Iversen describe how such occurrences amaze software designers who usually only see users use products/services when the project is near

completion (Bodker & Iversen, 2002). This is when the importance of participatory design (PD) becomes an invaluable tool.

Participatory Design and Justification:

Participatory design was first developed in Scandinavia to overcome labor issues that incorporating computers into the workplace caused: people feared computers could replace them or they would lack the necessary skills to operate them (Kensing & Blomberg, 1998). Participatory design seeks to create a tight connection between designers and workers to ensure that both can effectively express his/her viewpoint. Numerous benefits are seen in incorporating participatory design in the design process; however, finding the correct participants is necessary for an effective study. Incorrect participants can disrupt research and create ill-equipped designs. Managers are not included in PD because of the belief that they can hamper the opinions of workers and therefore potentially cause workers to focus on the cheapest possible designs (Kensing & Blomberg, 1998). Another important attribute of PD is that, "Worker participation is considered central to the value and therefore the success of the project" (Kensing & Blomberg, 1998, p. 173). Without worker participation, products and services might not be as functional if their experiences are not taken into account. Hasvold and Scholl describe how a worker's "shared connections" in the process of using the device/service and its relation on the organization, as necessary to aid a designer to find areas that are ambiguous and need of improvement (Hasvold & Scholl, 2011). Nevertheless, for this to be effective, a user must understand the product/service they are helping with in the design process (Bodker & Iversen, 2002). A worker cannot fully understand the product he/she is co-designing if they have neither used the product before, nor seen the product before.

Process to Find Participants:

Because of the short nature and lack of resources for this study, the user-base of study will be a non-probability random sample. I did not perform an ethnographic study, as described in Bodker and Iversen's research. Bodker and Iversen consider an ethnographic study important because it would have given me the opportunity to better frame my questions in the perspective of an undergraduate and employee; however, I will instead use my personal experiences in each situation to configure my questions (Bodker & Iversen, 2002). In addition to this, I did not perform pre-participatory design interviews to find viable candidates or seek a particular demographic group other than asking people if they were an undergraduate student or an employee. I did create a set of questions to guide the co-designing process to encourage the participant to think in the mindset of a designer. The questions are available as an attachment under the Questions.docx.

In finding participants for the ticket vending machine design study, I asked the first visible Metro employee if he would like to participate in the study, but he declined to do so and instead referred me to another employee who gladly accepted participation. Conversely, for the ELMS study, I went to the Stamp Union's food court and asked random students if they use ELMs and if so would they be willing to participate in a study for a graduate course. This is not the most ideal for finding a random person; nevertheless, it fits the needs of the design workout. I decided to narrow my focus down to only undergraduate students because they are more apt to be heavily involved in all of ELMS's features.

Expectations:

In studying the WMATA's vending machines, I hope to see ideas that a designer potentially would not incorporate in a ticket vending machine had WMATA not asked a Metro employee to take part in the design process. I would expect the employee's experiences with the

machines to be vital to finding system flaws and benefits not visible to either the average user or a designer. I imagine the employee will be heavily critical of the intricacies that the ticket timetable involves, given ticket costs vary from time of day to day of week, in order to calculate the ticket's correct cost. The machine would be more practical if it were to ask the user to input their desired location and automatically calculate the cost of the ticket. Metro employees will probably also be critical of the process of adding money to the SmartTrip card because of the confusion of when one would tap and tap again his/her card. Moreover, I wonder how reliable the machines are: to what extent they are out of service and in service.

Regarding the expectations of the design of ELMS, I expect the user to be heavily critical of the layout of the sign-in page and the magnitude of information prevalent to them. There is an abundance of information that can confuse the user and lead to greater user frustration. For instance, the sign-in page is overloaded and confusing because the login button is located on the left-hand side of the content area and not in a clearly marked region (see figure 3B). I further anticipate the participant will dislike the sidebar (see figure 6) because of how the tool section is separate from the rest of the links and how the toolbox shows pictures next to each tool link (see figure 6).

Resources:

The resources that I gave participants were either a photograph of the current WMATA ticket vending machine or screenshots of ELMS. From the picture and screenshots, I asked participants to analyze aloud and draw on a blank sheet of paper what designs of the current product and services they would change and the changes they would make. With the paper, I gave participants a black and blue pen and 12 different color pencils in the hope that they would use color in their designs. Shockingly, neither participant chose to utilize the color pencils much

in their designs. Concepts from Walsh et al.'s layered elaboration idea of placing a clear sheet plastic surface over the original design influenced my decision to offer a blank sheet of paper next to the original design. Walsh et al. utilizes this technique by placing clear sheets of paper on top of the original design to allow children to draw on without modifying the original paper. Children are than able to compare others' ideas along with the original design (Walsh et al., 2010). Given I used only one participant for each study, I modified the technique and instead placed a white sheet next to the original design instead of a clear sheet on top of it. I also recorded the dialogue between the participant and myself for the ELMS case only for easy reference.

WMATA Participatory Design:

My results were contradictory to what I expected in regards to how the WMATA employee drew the new ticketing system. The employee states that the machine should be as simple as possible to use and believes the system is already reliable and understandable in its current form ("WMATA Employee Interview," 2011). As such, I had difficulty in trying to find new ways in having her express if she really likes the system or does not want to express her belief because of the workplace setting. She does criticize the fact that Metro does not have a set single fare system similar to what New York City does for its subway; therefore, one of my theories was correct in that it is difficult to pick a correct fare for people unfamiliar with the system. She states how the machine actually gives audio directions and many users are unaware of such a feature; therefore, her design shows a strong focus on audio and specifically naming the vending machine verbal assistant. Figure 1 below shows this emphasis on audio as compared to the original system in figure 2 where only a button marked "audio" is visible feature of such a function. She emphasizes audio because many riders are unaware of the feature and she believes

it reduce the level of assistance requested. Once more, her design emphasizes that all forms of payment should be at the same level/height compared with figure 2's system where the heights are variable. She explains that the system should be as elementary as possible and therefore the payment method should be straightforward. The current system's use of numbered steps is something she cites as making the experience elementary and her justification for placing all available payment methods on the same row (see figure 1) ("WMATA Employee Interview," 2011).

The employee, after reminding her to create a method for adding funds to the SmartTrip card, designed a touch screen (see figure 1) that allows for easy input of adding money to his/her card. As she does not explain the interface in detail, I cannot probe this further. I am unsure where she would place the SmartTrip card because its place is not visible on the design, but I assume she wants the card to be located in the same slot as the one-time-use fare card. Overall, her design is strikingly similar to the current ticket vending machine.

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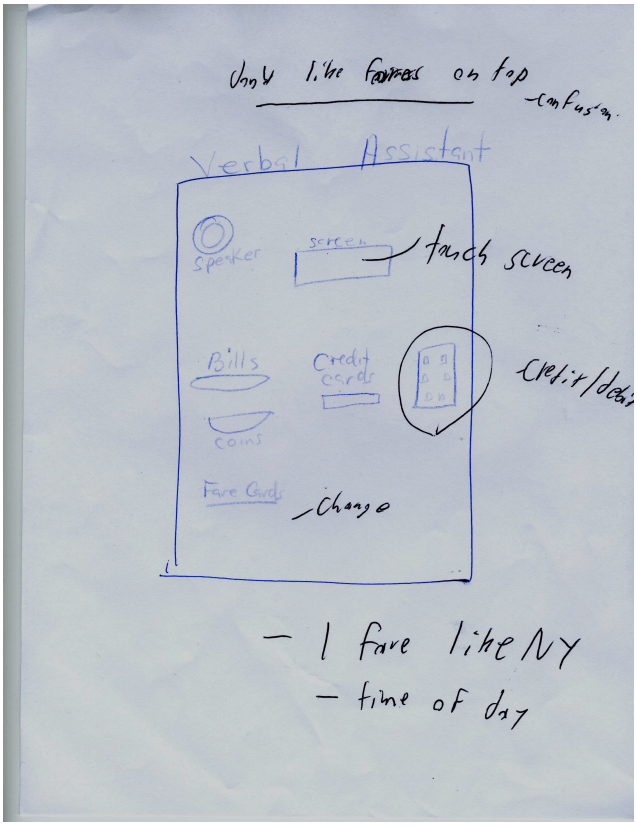


Figure 1

Figure 2

ELMS Participatory Design:

Similar to the WMATA participatory design, the student considers ELMS well designed and easy to use. She says that ELMS is an important part of her daily study routine since she uses it as a daily agenda. Again, akin to the Metro employee it was difficult to encourage the student to review ELMS's design and create her own design. I therefore sought to give her suggestions for possible features and ask her if certain features she uses are confusing to utilize. I did the same procedure for each screenshot and asked her to redesign each feature and ignore those she had not used before; the discussion board for instance. I found it difficult not to stress the salience of one issues over another, thus accidently affecting a particular design decision by participant, as described by Jameson et al. (Jameson et al., 2011). Oftentimes, she considered the

current design to be adequate and chose not to redesign it. From this, I did find out that the student would desire the login button to be on the top right side of the page as seen in figure 3A, as (continued below)

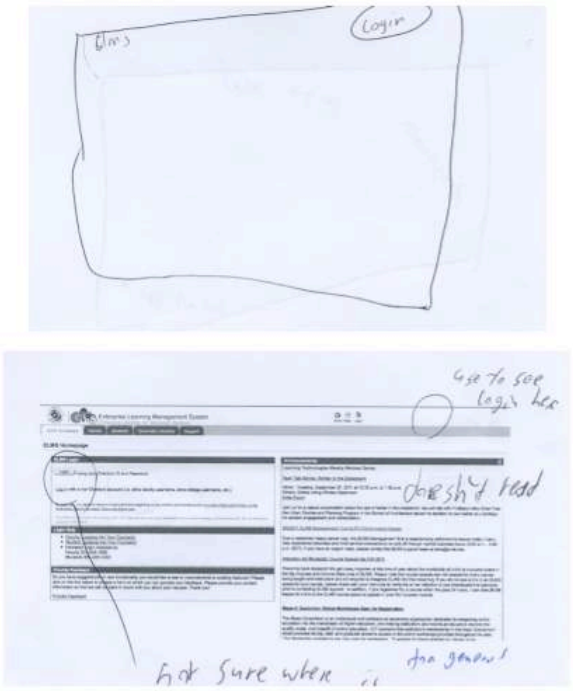
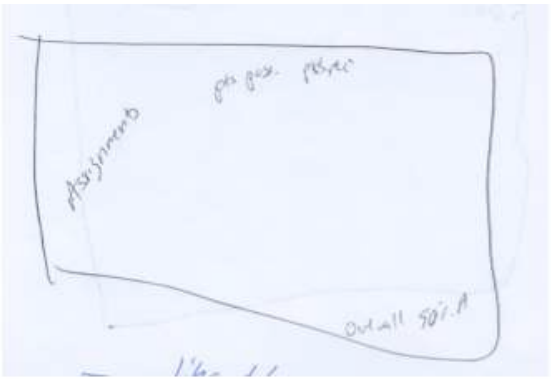


Figure 3A (Top) Figure 3B (Bottom)

compared to figure 3B's login positioned around text in an area that is indistinctive compared to the other text boxes. The participant, being a first-year student, wants the grade page layout to show each assignment/test individually similar to how she saw her grades in high school. She does not like having to add up the points to find out what her actual grade is for an individual assignment/test. Figure 4A shows the comparison between figure 4B. In contrast, figure 4B, the original, only states the available/received points and the current class grade.



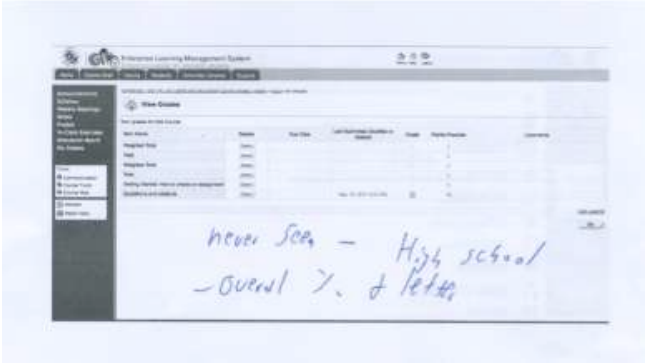


Figure 4A (top) Figure 4B (bottom)

The last element the person redesigned was the announcement pages of which she considers quite disorderly. She deems it pointless to have tabs seen in figure 5A that show announcements

from the past seven days, month, and today. A more logical format was (..below)

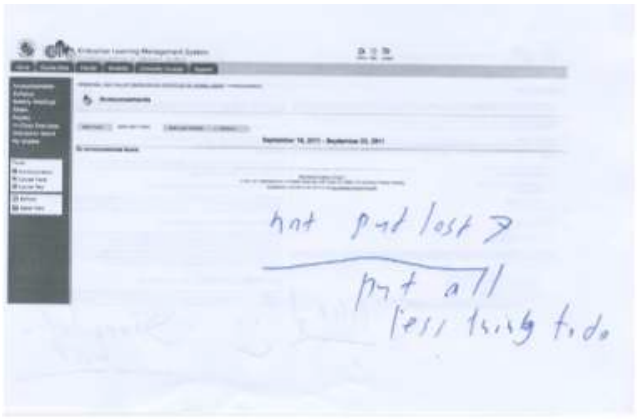


Figure 5A (top) Figure 5B (bottom)

conceived with all the announcements being visible on a single page from newest to oldest, as seen in figure 5B. In her participatory design, I had hoped she would have been more critical of ELMS and redesigned a different layout such as an improved sidebar (See figure 6), which I encouraged but failed to have her redesign. She chose not to redesign the general look, the sidebar and toolbar seen in figure 6, because she could not think of any ways of improving the design even with additional pushing to do so by me. She specifically states that the toolbar is a nice and usable design ("Student ELMS Interview," 2011). The student, however, only deems certain areas necessary for change, the content area seen in figure 6, thus only giving me a few examples to cite.

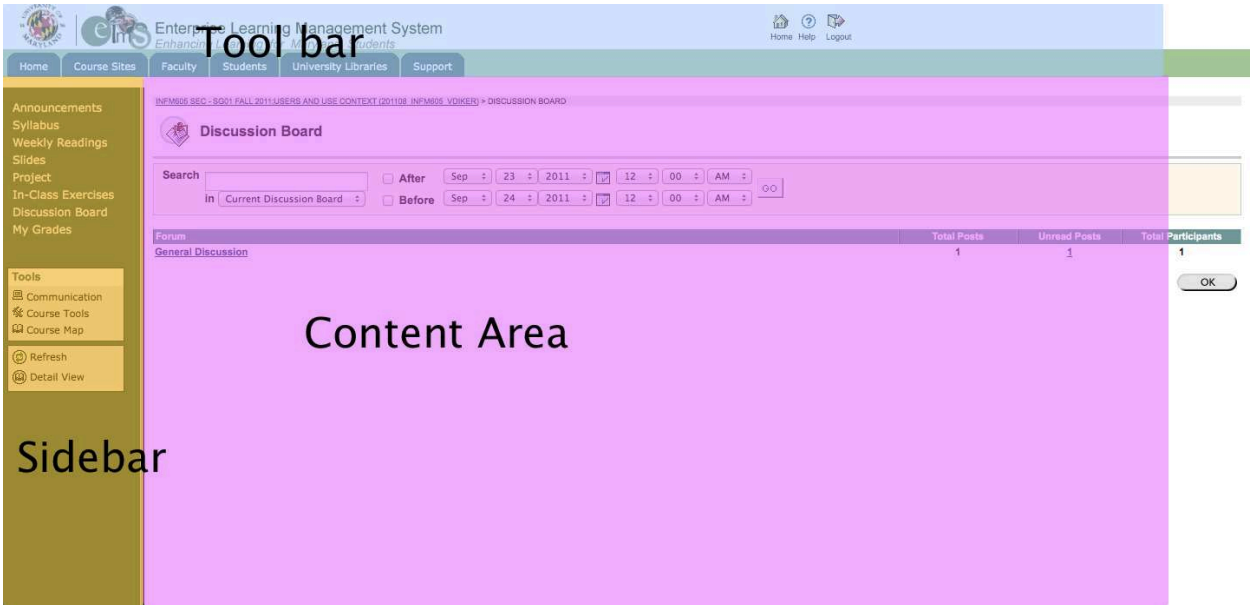


Figure 6

Conclusion:

The prospects of actually implementing such suggestions need further study given the low participant base of only one in each focus area. Multiple iterations of the design process are also necessary to see not only the applicability of suggestions, but also if the suggestions actually enhance the user experience. Further study is necessary to find the correct level of influence needed to have a participant be more open to redesigning products and services. As such, if the suggestions are implemented, they are apt to produce a more user-friendly experience.

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