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Assignment #2: Human-Computer Interaction
Bad Designs & Inclusive Design
February 25, 2022

Part A: Bad HCI Designs

Looking around my apartment for a *Bad HCI Design*, I immediately knew the number one item I have had a less than favorable experience with. My roommates and I have all had issues dealing with this bad design from the day we moved in. The poor design in question is the controls for the washer and dryer. Show in the image to the right is the control panel provided to operate such equipment. At first glance, the design is sleek and clean.
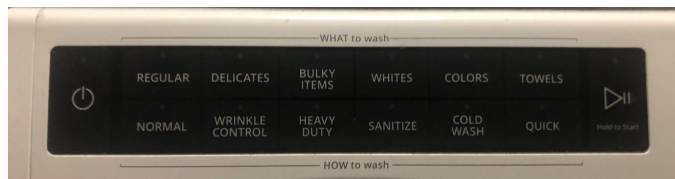
To begin using the washer, one would start on the left by turning the machine on, move rightward and select the desired rise cycle, and start that machine by selecting the furthest button to the right. All of the operations to successfully begin washing your clothes start on the left and move rightward. The process of operating the system follows a good alignment strategy, known as reading gravity. Humans have been trained to operate from left to right, like when reading the words on a page. But, the problems begin when you physically interact with the controls.

Having never integrated with this control panel before, you would believe that each of the buttons is in fact a button, but this is not the case. These "buttons" are touch sensors. They do not retract like a physical button when applying pressure. They operate by sensing contact with a human finger, similar to that of the screen of a smartphone. The issue is that the sensor is located in a very precise location, and if you do not touch the correct region, the button will not activate. This leads the frustration and an attempt to operate the "button" like a traditional button by pushing harder. Push the button as hard as you'd like, if you are not within the appropriate contact zone, nothing will happen.

This flaw cannot be attributed to user fault, it lies entirely with the designer. The inability to wash my cloth has led to much frustration. I luckily was able to figure out how to operate this system, but it took a long time and much headache.

Lacking Non-Inclusive Design

When considering inclusive design approaches, this design fails to meet learning/cognitive and mobility approaches. The design does not meet the learning/cognitive inclusive design approach because the effective operation is not intuitive (and being very tech-savvy, I would consider myself very intuitive with technology). But this control panel design requires specific prior

knowledge to operate. One must know exactly where to press the select button option to use the system. The design does not also meet the mobility-inclusive design approach. Like many compact apartments, space is limited and must be used wisely. To meet this limitation, the dryer is stacked on top of the washer. This is not an issue for me, but for someone who is wheelchair-bound, they would be unable to access the dryer.
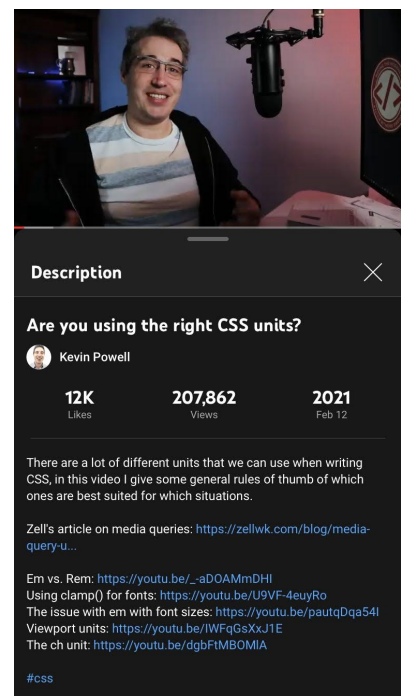
Part B: App Inclusive Design Need

I have been very fortunate in that I do not have any disability that requires an additional need for a more inclusive/accessible design. That being said, it was not easy for me to notice a flaw with any other apps I used. That was until last night. When watching a coding tutorial on the YouTube mobile app, I attempted to locate the GitHub repository listed in the video description. At first, I was a bit confused about how to locate the video description. I am not visually impaired and nothing was jumping out at me on how to locate this. Then I noticed it. A small icon on the righthand side of the page indicated that more content was available, at last, I found the video description. Here are a few screenshots I took showing the steps to find the description using the YouTube mobile app.
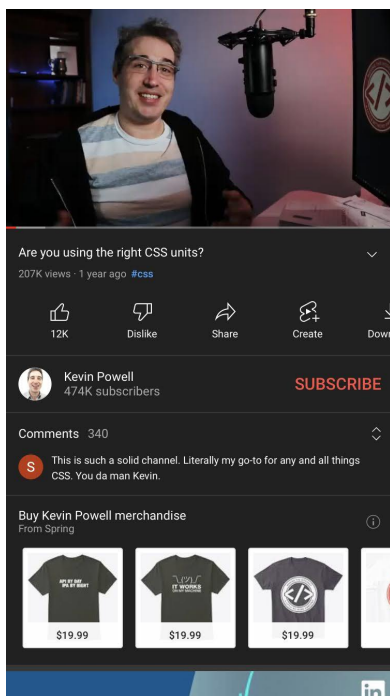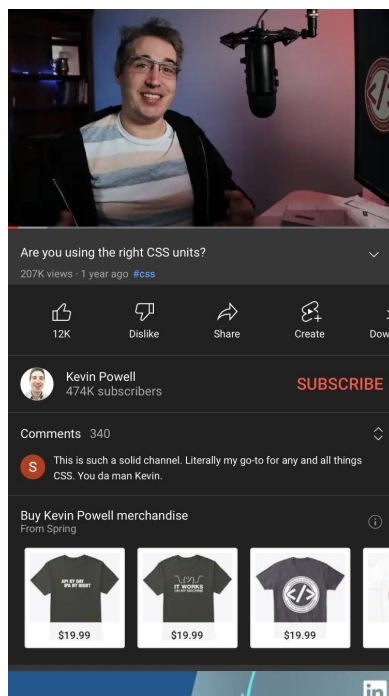
| Main View | Pressing the "Title" button | View of Description |

Looking at the above screenshots, I would conclude that the developers have done a good job at making each component of the page distinguishable and simple to understand. The video title, "Are you using the right CSS units?", is located at the top. User actions related to the video (like, dislike, share, etc) are located beneath the video title. Then the account's channel and comments

follow. What is not evidently clear is how to access the video's description. Located to the right side of the video title is a small downward-facing arrow indicating more content is available.

Standard Guideline Violation

Proper contrast ratio is a common standard guideline to increase text visibility. This strategy is also used above to indicate the separation of detail components. Notice that the account channel and the comments have borders around their components. This indicates to the user that these are separate items with distinguishably different content. But also notice how the video title and the video-related user actions (like, dislike, share, etc.) do not have any border separating their content. As a user, I look at this design and conclude that no additional components exist within this region. But, when clicking on the video's title, a border does appear in the animation, indicating there is some content separation (I was unable to capture this in my screenshots above).

While the dropdown arrow is visible, it goes unnoticed. We learned that the Gutenburg Rule suggests how a user visual tracks a page. Content on the leftmost side resides within the primary optical area, but the content is less likely to be observed as its position moves rightward. I believe that this design violates the proper contrast ratio which provides increased visibility. The separation of content, video title, and video description has become blended.

Fixing this Issue

To address this issue, I would suggest that the layout includes a component dedicated to the video's description. I would like to see a similar module to that on the comment component. Where section, surrounded by high contrast borders, provides a preview of the video description. This would more clearly indicate to the user where to find the video description.

Testing Accessibility

Considering the four focuses of inclusive design (perceivable, operable, understandable, and robust), I believe two of these four are primarily at play; perceivable and understandable. In comparison to the desktop version of YouTube, space is very valuable and limited on a mobile device. I believe that the developers wanted to utilize a limited screen landscape by making additional content available via dropdown accessibility. The developers were striving for perceivability. When doing so, they lost understandability. With this design, the video's description is not intuitively accessible.

To test the success of the recommended design fix above, manual testing and user testing would be the primary methodologies. To manul test the app, accessibility services would be used to analyze the interactive nature of the app. As for user testing, there are two primary persona groups that should be targeted in these tests. The first group would be the visually impaired and the second group would be more elderly people. Although age is not directly considered a

disability, older groups of people should not be disaffected because they are less intuitive with modern UI design.

To implement user testing, there would be two rounds of tests. First, each group would be asked to locate the video description with the existing design. Second, each group would be asked to perform the same task with the new design. An analysis would be done to compare how easy the task was performed in each design. Each group would also be asked to provide feedback about their experience and whether or not they had difficulty performing each task.