P4 Project Reflection

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What?

This fourth engineering project for 1P13 tasked me to team up with a project group with the goal of creating a design solution for a client. We were introduced to our client, Alanna, and given information about her regarding her backstory, medical history, and more. Alanna's situation was unique given her various autoimmune diseases, so creativity and good problem-solving skills were necessary. As usual, a weekly timeline was given to us to complete our project.

In the early weeks of the project, we had to frame the problem based on the information we had received, and then use the engineering design process to come up with objectives (attributes of the design) and constraints (limits or restrictions on the attributes of the design) that our design would have, followed by functions (what the design is meant to do) and means (how the design achieved what it's meant to do). Next, we had to create concepts, and then refine them until we eventually come out the other side with a completed design solution.

Framing the problem was relatively simple since each member of my team had done their own research and took notes from the client visits but making decisions about refinements proved to be more difficult than we had initially anticipated; we spent a lot longer than we should have on coming to a unanimous agreement on which design to proceed with for the refinement stage. Perhaps this was because we were too all proud of our own individual concepts to give up on them immediately after their conception. Creating a weighted decision matrix (each proposed design is rated on a weighted scale of how well it scores on each project objective) helped us somewhat with this. I still felt a little anxious about the decision moving forward, but we pressed on only to later realize that there were some issues with the design that needed to be worked out through iteration.

So What?

This project was an enlightening experience for me in some ways; I learned a lot about designing in terms of accessibility as well as the importance of how early or later decisions are made in the timeline of a project. I learned these things because they were challenges that my team had faced firsthand during this last month. A particular challenge was having to work around a somewhat initial flawed design during refinement due to a lack of foresight.

The design we had chosen to proceed with in the project after the conceptualization stage after some deliberation was one created by me. My design featured a large maneuverable extending mechanism, with an armrest attached to the end. It solved the issue of our client having to bear the weight of her arm while she paints. The reason for this decision was because it scored the highest on the weighted decision matrix, but also it qualitatively seemed like a very promising solution because, in theory, it accomplished all our objectives with flying colours. However, as we soon found out, this was only in practice; after looking into the logistics, we realized that there were some fundamental issues (tipping of the base, ease of height adjustment, etc.).

Learning about the importance of accessibility gave me a very important wake-up call as a prospective engineer. Attending lectures and client visits opened my eyes to the fact that there is no "average person", and that creating design solutions must take the 95% rule into consideration. This makes sense to me in hindsight, but it was not something I had ever considered.

Now What?

One thing that I will take my newfound knowledge of designing in terms of accessibility into my future projects. Moving forward, anything that I design should comply with the accessibility design standards.

Something else that I learned during this experience was the importance of how early a decision is made in the overall timeline of a project. Decisions should be made as late as feasible, as it is better to hold off while gaining more information about the scenario than to rush in and hit a wall that could have been avoided otherwise. I now am aware of the importance of this and will implement it in the future. This is a pertinent take-away for me as it will save me in my future projects when I am in a position where I must make a non-easily reversible decision.