

Peter Khalaf's Project 4 Reflection

Project 4 was a very unique and valuable experience that has taught me so much about the design process and communication with clients. I think that it is extremely valuable to have a client-based project this early into my engineering career because it will help put things into perspective in the future. It will also serve as a reminder of why I chose this as my career path, because I want to use my skills to help people and make the world better. The most important lesson from this project was to never get attached to a single idea, in my opinion. This was something my team struggled with but managed to overcome. In the end, I believe we created the best design we could with the resources we had access to.

Our attachment stemmed from one of my initial ideas of using something similar to a drill bit adapter seen on power drills combined with a comfortable grip such as a ball shaped handle or a wide palm grip. I really liked this idea, and my teammates seemed to agree with me, which further solidified it as our go to design. However, the problem was that this was brought up way too early, and before we had a chance to explore the design space. I believe this hindered our ability to come up with truly creative designs, since I personally lacked the motivation to get truly creative because I believed we already came up with a great solution. In the end, I was frustrated to learn that the design had many complications, including the fact that the client had previously tried ball shaped grips and did not find them comfortable. The design also required brushes that were shorter than the standard, meaning we would have to cut them or create custom brushes. Luckily, it was not too late for us to change our design, so we did. My teammate had a brilliant idea of using a pistol style grip, which would allow for more flexibility. He also proposed using a cut out and clamp to hold different sized brushes in place, which solved our issues with the previous design.

It was hard for me to let go of the old design because it required me also letting go of my pride and accepting that my idea was not the best solution to the problem. This is an important lesson to learn early because pride can lead to many careless mistakes and overlooking alternative solutions that might be better suited for the client's needs. This experience also led us to meet up with another team to exchange feedback on our respective designs. We did this to avoid our past mistakes by attempting to identify design flaws early on so they can be addressed appropriately. I also personally learned that it is smarter to not discuss solutions before individually trying to come up with our own ideas. Attending the showcase opened my eyes to more creative solutions to our problem and I realized that if I had not brought up my idea early on, we would not have been so focused on handles and grips specifically. This is extremely important, because we would be able to come up with a better overall solution if we individually tried to tackle it from different angles as opposed to the same one.

Overall, I learned that it is important to let go of my pride and be as open minded as possible throughout the design process. Pride in oneself leads to complacency and carelessness. It also leads to defensiveness and aggressiveness when receiving feedback. These are things that will hinder both a team and an individual and reduce their degree of success. I learned that

Peter Khalaf (khalafp)

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feedback is critical at every step of the process and that criticism should be taken constructively and not personally. It is important to receive feedback because others might view your design differently than you do and be able to identify any flaws that you might have overlooked. I also learned that design ideas should not be openly shared before others have a chance to come up with their own solutions. This is because sharing my idea when no one else has anything concrete will end up shaping their ideas to be closer to mine which leads to more limited exploration of the entire design space.

I am sure that everything I learned in this project will help me in both my studies and future projects that I take on. I will apply what I have learned by keeping the goal of the project in mind to help set my perspective. By reminding myself that the purpose of the project is to help someone and not to show off my skills and ideas, the tone is set for how it should be approached. This will help me to make the decisions that help the client the most as opposed to the decisions that make me look the best.