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ENGR2050 Intro Engineering Design
Self Reflection Written Assignment

I was successful in making personal contributions to the group in a few ways. I brought forward lots of ideas, including specific tools, materials, and designs, and I picked apart all of our ideas (including my own) to find any possible flaws, and worked with the group to find solutions to these issues. I think this was most notable in the initial idea phases, where I pointed out some ideas that would use more energy than they could ever hope to increase in production. I also remember in the phase of breaking into sub teams, sketching out the subsystems and explaining why I thought they should be broken down in that way to Jameson and some other group members. I also made the contributions of some more technical drawings, both with sketches when talking with Sam Chiappone about approval for our project, as well as a quick CAD model for our final poster presentations and report.

One way that I struggled in this regard was with the social aspect of this process. For example, if someone put forward an idea that I knew wouldn't work in this context, I was very blunt in shooting it down. I would do my best to explain the technicalities I saw of why it wouldn't work, but on at least one occasion, this just escalated into us talking over each other. If I remember correctly, this happened with Fanta and I during the initial idea phase as well as the ideation derby. Another issue would arise when I was misunderstanding someone's idea and would shoot down a good idea. This type of misunderstanding actually happened with some regularity when working through our wiper design in the ideation derby, one time with Kismet in particular, as we had several design ideas that had rotating parts, and all of them were referred to with very similar phrases like "the rotational motion design".

I used the Johari Window self assessment tool after mid semester feedback. I was aware that I could be a bit blunt at times and possibly come off as a little rude, but this feedback showed multiple group members pointing this out, and more specifically, that I should make it more clear that I'm open to other's ideas.

I also found the Myers Briggs Type Indicator test to be quite useful. It's been a few years since I've taken a 16personalities test, and while in the past I've always gotten INFP, this time around I

got INTP, replacing Feeling with Thinking. My group also gave me the INTP role. This was a really interesting realization, as at first I thought this made more sense. I've always more closely identified with the term "Thinking" than "Feeling", but as I thought about it more, I realized something different. I'm often the one to point out the pros of all arguments, but especially during the start of this project, I spent far more time finding the cons of all arguments. This makes sense in terms of this class, as one fatal flaw can destroy your chances at having a working prototype, and notably that my group already had members throwing out plenty of ideas, but no one else really looking deeply for their flaws, but it felt… not great, to realize that I've been more negative when comparing arguments than usual.

S: I hope to get my work done in a more timely manner. I'll do this by finding ways to motivate myself to do work after it is assigned rather than before it's due. I hope to be withing the first 50% of my peers to complete the average task. M: I'll measure this by comparing myself to my peers, giving me an idea of whether I'm the first or last one to finish something (or anywhere in between), as well as by looking at how long has passed from the assignment date and how long is left until the due date. A: I believe this is achievable because as it may not always be possible to complete things early, I could certainly do better on average. R: I believe this is relevant for obvious reasons not only in school, but in the workplace, and really anywhere in life. It's better to have a cushion for when unexpected events come up, its better to be pushed up to the due date than past it. T: I hope to measure this and improve this skill both over my summer internship as well as throughout senior year. The sooner the better, but by the time I start looking for a real career sounds like a reasonable timeframe.

S: I hope to become better at giving criticism without coming off as rude or offensive. M: This goal can't really be measured quantitatively, but qualitatively, I'll judge people's reactions and self reflect about what was said if it could have been said better. A: This is an achievable goal because all it should take is more active thought put into these situations to improve them. R: I believe this is relevant because again, giving criticism well is important in all aspects of life. T: Similar to the last goal, the sooner the better, but before finding a career after college sounds like a good cutoff.

My team and I addressed public health and safety by taking time to add safety precautions for our users. We did this by using strong materials and construction, by having a safety valve, adding handles for portability, and using mylar insulation to prevent them from getting too hot. We designed for welfare and economic factors by keeping our price as low as possible. Throughout the course, I learned the importance of taking a deeper dive into these factors to find out some overarching guidelines and restrictions that you need to apply to your design.

We made decisions on the problem we would solve and what factors needed to be considered based on research and interviews with people that have experienced these issues firsthand. This showed the ethical and professional responsibility of designing with the good of the end user as the main guideline in the engineering process.

Our team encountered several technical challenges throughout our process. The first was finding a container that worked while fitting within our limitations for the class. This was solved somewhat successfully, as our gas can held the pressure it was given, but it seemed to be pushing it's limits, and it was only at a lower pressure because of a failure elsewhere causing pressure loss. The main technical issue we encountered was interfacing the pipe to the gas can. This issue was never solved, and I largely attribute this to our strict time limitation, as we only found the sub-par gas can solution last minute. If we had a plastic container in mind from the beginning, I expect we could have found a much better solution to solve both of these issues.

This course gave a much greater insight to the professional side of the engineering process. We weren't allowed to use our primary design, we then weren't allowed to do our secondary design and had to get special permission to do a heavily modified version of it. I've always known that in engineering, things don't always go smoothly, but I've always related that to technical issues rather than professional and policy issues.