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**[GRAND CHALLENGES
SCHOLARS PROGRAM
PORTFOLIO: FROM OLIN TO
INDIA]**

Grand Challenge: Engineering Better Medicines

Introduction

This portfolio is a compilation of experiences related to the Grand Challenges area of Engineering Better Medicines. I spent six months working in India for a startup called Embrace Innovations to develop low cost infant warmers to help save millions on babies' lives in developing area. With my interdisciplinary background from Olin in entrepreneurship, user-centric design, and mechanical engineering, I was able to apply myself in a global context and learn about the problems in the world that engineers like me can tackle and solve. In this set of reflections, I recount a summary of my experiences over the past four years at Olin and abroad that have shaped who I am as a person and an engineer today. In the process, I have had experiences that align well with the Grand Challenges Scholars Program goals, which include a long-term project, service learning, global awareness, entrepreneurship, and interdisciplinary learning. I hope you enjoy learning about the experiences that have enriched the past four years of my life!

Reflection

I started first year thinking that I wanted to build rockets and get an interdisciplinary education that would allow me to work in the International Space Station program. But, what I realized is that during my time at Olin, I fell in love with user-oriented design and mechanical design/engineering instead of fluid dynamics as I initially thought I would.

During my second semester of first year to my first semester junior years, I tried hard to actually get the interdisciplinary education that I had initially come to Olin for. The first semester my first year at Olin was predetermined in curriculum and exposed me to a lot of different tools and technical vocabulary. I learned how to bring an idea into physical form by learning how to CAD and machine, I learned how to model physical systems with Matlab, and I learned what user-empathy meant and how to understand people through the lens of anthropology. But, starting second semester sophomore year, I needed to start forging my own path. I took classes in software design, business, public speaking, sewing, networking, Hindi, user-centric design, mechanical prototyping, machine shop operations, mechatronics, advanced mechanical engineering theory courses, and product design. All of these courses helped me to understand the variety of technical and non-technical knowledge that I would need to build upon in order to do engineering and problem-solving on a global scale. The term interdisciplinary is interesting in that it means different things to different people. Some think that it means understanding software, mechanical hardware, and electrical hardware. Some might think that knowing how to explain that information to the public is also important. While all of this is true, in my mind, it is much more than that. It's about understanding the culture, the people, and the context of the problem you are trying to solve. I got a basic understanding of this during span of 5 semesters at Olin from first year to first semester junior year.

I was yearning to take some time off and get some real world experience. I also had wanted to do something to use my engineering/problem solving skills in a setting for the Base of the Pyramid for people in India. I had wanted to do some type of community service or volunteer work in India since I was very young, and I had been planning for doing something like this for a very long time, since I was 9. My passion for community service came from my mother. I was always raised with the thought that I was fortunate than so many people, even if I was not rich, and that I should help others whenever I could. Since my ethnic background is Indian, I connected my heritage ties to my love for helping others from an early age. I was able to find an opportunity with a small company called Embrace based in Bangalore India, founded by four Stanford Graduate students, that was working on low-cost infant warmers. I had never done anything in the health-care industry before, and I didn't even know it was a problem in India. But, I could identify with the company's mission to help save millions' of babies' lives, keep families together, and decrease the population growth by decreasing the infant mortality rate because there is correlation between decreased infant mortality rate and population of a country. When the babies that people have a higher chance of living a healthy adult life in the future, they tend to stop

trying to have so many children, which decreases the population. India is a country that has major population issues, and it is important from a country's sustainability standpoint to decrease the population.

While in India for a 6 month co-op experience, I was intrigued by the number of various problems that needed to be considered in order to develop a product that was going to save babies' lives and something that was going to be adopted by the Indian people. I was specifically working on engineering and design for a low-cost infant warmer, but I learned so much more about context, business, working in cross-cultural and cross-national teams, and how much times and energy it takes to get something done. I felt that this learning was absolutely necessary for me to become a better engineer and problem solver. I don't think that I could have learned so much without choosing to work in a real life problem abroad at such an early age.

After coming back from India, I felt more humbled intellectually more than anything. While in India, I was exposed to a lot of information that I knew was going to be beneficial to know in the long run. However, I knew that I still needed to learn more about what I was exposed to in depth and have practice applying it in an academic setting. So, I wanted to come back to Olin to continue learning about the real world in a more academic setting.

So, I came back for my last 3 semesters at Olin. I took a course on negotiations, more technical courses that would help me when solving technical problems at a deeper level, and SCOPE, the senior capstone in engineering at Olin. I learned that negotiations are a skill that is important for a variety of situations, and practically any dealing with anyone can be considered a negotiation, and it's a skill that I need to start developing more and more if I am going to be a better problem solver in the real-world. As for the senior capstone in engineering two-semester course, I am doing a project with AGCO (a large agricultural machinery company) to help farmers save costs and be more friendly to the environment by helping them spray their fields less by spotting problems in the fields with UAVs, essentially doing R&D. Some of the skills I have learned from SCOPE is patience. My SCOPE project tests my patience every single day because there are a variety of people and challenges that I have to deal with, from teammates to suppliers. And it's something that I am learning to get better at, and it's something that is absolutely necessary for good dealings in the real-world. Another thing that I am learning is communication with an external sponsor and how to manage and project and lead a team towards a defined goal, and to make sure that we achieve that in a timely manner. It's not easy to do something on a year-long scale for the first time, and it's something that I'm learning about in terms of planning something for almost 9 months.

Overall, I still feel that I have a lot left to learn to become a better problem solver and engineer. But, I have grown so much in these past four years. From the day I stepped foot into Olin, I didn't stop learning and realizing how much there is to problem solving, especially on a grand and global scale. Olin has given me the opportunity to learn and engage in various activities. This portfolio is only a small

collection of the various experiences I have had at Olin and abroad in entrepreneurship, service learning, global awareness, interdisciplinary experience, and a long-term grand challenges project.

Note: The rest of the portfolio has been removed from this version of the document since the information is not intended for public display.