**Team:** P21677 – 3D Bioprinter **Engineer:** Ramsey Doolittle

**What were the outcomes of the prior phase?**

1. What did I plan to do?

* Reach out to my past co-op manager for at least another 1-hour long interview session where we can ask questions and gain exposure to bioprinting research
* Bring up at least 1 new article, program, or idea to either the entire team or the bio team to facilitate discussions
* Work with the bio team to kickstart research/exploration into creating bioinks
* Push for a “demo print” led virtually by the past MSD team. This will provide us with flaws in the system and show us first-hand where we can improve
* Give Diana help as needed with using Smartsheet
* Utilize the DMAIC/DMADV process to come up with potential improvements we can implement
* Prioritize proposals for improving the bioprinter

1. What did I actually do? (highlighted in red above)

* Held Q&A with my past co-op manager about bioprinting
* Brought up the idea and sent paper detailing open source syringe pump we could use for our project
* Helped the team in understanding methacrylated gelatin, alginate, and mechanics of both
* Reached out to Nick Lee and set up time to have a practice print session with the team. I could not attend, but the team thought it was very helpful
* Proposals for improvement are now outlined, we just need to execute

1. What did I learn? How were plan and reality different?

I learned more about biomaterials and rheological properties of bioprinting through watching a research talk on many different aspects of bioprinting. Obviously learned a lot about our project specifically. Learned more about the team dynamics now that we’re more comfortably falling into our roles. Learning more about how people work/learn/etc. together. Plan and reality were pretty similar, but it was the day-to-day things that caught me up. I had a false positive for COVID which really threw me off and set me behind a couple days in both work and school. Rarely I was late on an assignment or task, but it did happen. I learned more about time management, and sort of what really pushes our team along to pursuing and achieving our goals.

**Team level goal for next phase**

In the Preliminary Detailed Design phase, we will divide work and develop specific schedules for the bioprinting and mechanical/electrical/software teams. Each team will work on design and conduct feasibility tests for their appropriate subsystems in order to determine viability of the selected concept and discover necessary adjustments to the system. Specifically, some feasibility tests that will be conducted include cell and material combination, crosslinking implementation, compatibility of existing electrical equipment, print head design details, and extrusion pressure limits.

**What do I plan on doing to ensure that my team has a successful review at the end of the next phase?**

* Do all my duties and be organized with communication
* Bring new ideas/solutions to the team (be innovative)
* Pursue more knowledge in the realm of bioprinting
* Balance work and school so that I can separate both distinctively and do well in both
* Set my priorities

**What is standing in my way of meeting my next phase goals?**

* Working full time 9-5 (ish) during the week.
* Need to dedicate time to read articles and specify which ones to read (gather list from somewhere)
* I will be off campus for the semester, so I will need to coordinate with the team when I will be back in Rochester and make the most of my time when I am back
* Make sure I know enough about where I am specializing in order to be of help to the team
* Not having access to the bioprinter (since I’ll be in Boston)