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EEEN40300: Entrepreneurship in Engineering

INDIVIDUAL REFLECTION

Starting out at the beginning of this semester I wasn't sure what to make of this module. Coming from a stream like engineering where you are trained to always find one particular solution, and led to believe that there are only correct and incorrect answers, it can be hard to change your mentality when undertaking a module like Entrepreneurship for Engineers. Early on I realized that to really excel at this module I was going to have to accept that in design there are many grey areas, and that to succeed you must alter your "method of thinking" to allow for this.

I had always believed I was quite good at speaking in front of a crowd. I felt that presenting was something I would definitely excel at. Furthermore, I have experience leading teams, in both an academic, work and sports environment, and felt I could draw on these experiences whilst working with my team member. In spite of this, what I learned quite quickly was that despite the fact I may have had some experience in these areas prior to beginning the module, I am by no means an expert. My presenting skills in particular has come on leaps and bounds over the past few weeks.

As far as my team was concerned I genuinely feel I couldn't have been luckier with who I was teamed up with. Right from the off we gelled as a unit, and it was probably due to this fact that we did not feel it necessary to elect a leader or project manager. Instead we employed a dynamic leadership style where the person who would be presenting in the coming week would take ownership over the slides and the material in that week's presentation. This worked well for the first few weeks, but as the semester continued and our individual schedules began to become increasingly more hectic with assignment deadlines and midterm examinations, some aspects of our project began to suffer as a result. Our interview tally began to decrease and our individual research also was not to the standard we had set for ourselves in the early weeks of the semester, and so we called a team meeting to rectify it. We decided to loosely define roles for each member of the group according to their skillset. These roles interchanged on a weekly basis but at least we knew that every week all the bases were covered, so to speak.

These individual roles are probably something I would define sooner in future projects. It just saves the feeling of having to "catch up" to the pace you had originally set for your team. This leadership style does take a lot of trust in your team mates so that everyone feels each member doing their fair share, but luckily trust wasn't an issue in our team.

On a more technical note I definitely learned an immense amount regarding customers and the common pitfalls of early start ups. Our initial idea was littered with assumptions that we eventually invalidated through our 55 customer interviews with former patients, orthopaedic consultants, medical device researchers and other hospital staff.

Firstly we believed that we could set up our company independent of the hospitals, but this was just not the case. The first thing any individual does if they injure themselves is rush to a doctor or emergency room to be examined. This led us to realize that working in conjunction with hospitals was imperative to ensure our product was a success.

Secondly, we assumed 3D printed casts were the best method of bringing orthopaedic casts into the 21st century. How wrong we were! After undertaking an interview with Dr. Declan Reedy we discovered the infrastructure surrounding 3D printed casts is extremely daunting to hospitals who are hoping to cut costs. This is before we note that the patient, our end-user, will not receive the 3D printed cast until at least the following day. This led us to explore other possible methods of deploying an orthopaedic cast, ending eventually in the current UCast.

These assumptions were clear examples of focusing on the solution and not the problem. It wasn't until roughly week 8 that we all took a step back and asked ourselves "Is 3D printing the best way to tackle this issue?" This same mode of thinking led us to originally cost price our product, however, after many interviews with former patients we noticed that our end-users highly value what UCast can offer them on a day-to-day basis, be that the ability to wash, wear their favourite clothes, or even avail of the latest healing methods like ultrasound, which have been proven by "The Journal of Bone and Joint Surgery" to reduce your healing time by up to 40%. As a result of this, we decided to alter our revenue model and change to a value priced approach.

However, patients were not our only customer archetype we needed to satisfy. 3D printed casts could help our patients with all these issues, but they caused logistical and timing problems for already overcrowded hospitals. This is why we then tackled the deployment time and cost factor associated with 3D printed orthopaedic casts, aiming to design a cast that is as quick, if not quicker, to deploy than a 3M fiberglass cast, and that also provide an increased cost benefit to hospitals. With the UCast we have managed to alleviate all these issues.

I think it is clear from my description above that by no means is entrepreneurship easy. At the beginning of the process I was convinced that if you had a clever idea your product would succeed. However, I now realize having a great product isn't everything. You need the

right people, the right environment, and a bit of luck for your product to be successful. Moreover, I realize that just because an idea fails does not mean that the company has to fail as well. You must learn from your mistakes, iterate, and move on. We were convinced that 3D printed casts were the best solution to the problems associated with outdated orthopaedic casts. When we realized 3D printed casts created as many issues as they solved, we had to take a step back, review our insights from our customer interviews, and start again, and we came up with a much better solution as a result.

This module has led me on somewhat of a path of self-discovery. I have realized that under pressure I am able to perform a lot better than I thought I could. My final presentation didn't go exactly to plan, but as I trusted in my team and my product, and knew my team trusted in me, I gained the confidence to say no and start again.

I also learned that I really want to start my own business one day. The adrenaline rush and the excitement I felt throughout this experience is something I thoroughly enjoyed. I also realize that sitting behind a desk fine tuning technical aspects of a product is not the only thing I wish to do. I really enjoy working and talking with other people and learning from them and I hope to do this in the future.

If I were to start a company in the morning there are a few ideas from this module that I would definitely implement. Firstly, I found the ideation sessions, where everyone critiqued your presentations, very beneficial. They helped me realize issues with our product that I feel I would never have noticed otherwise. I definitely would run these sessions regularly in my own company.

Secondly, regardless of how enthusiastic you are, or knowledgeable about a certain sector, mentorship from someone who has already brought a company from the start-up stage to market is imperative if you wish for your company to succeed, and someone who fits this description would be one off the first roles I would hope to recruit to my company.

In conclusion, the Entrepreneurship for Engineers module has been a steep learning curve for me the past 12 weeks. From discovering the format of a Business Model canvas, to transitioning to a "problem based thinking" approach, and finally to prototyping our product to meet the necessary standards and requirements of our many customer archetypes, I have learned that to disrupt any current market, or even to create a new one, it takes patience, the right people, careful planning and revision of your product, and maybe most importantly, a bit of luck, that at the time your product is ready to launch, the market is there for it.

EVALUATION SHEET OF TEAM MEMBERS.

EEEN40300 Entrepreneurship in Engineering - Semester one – Academic year 2016-2017

Peer Team work Evaluation Sheet

Your Name: **Fergal Lonergan**

Team Member 1 : Blair Flinn **Team Member 2: Bill Shannon**

Team Member 3: Jenny Freeley **Team Member 4: Michael Rodgers**

Please evaluate each of your team member and add the evaluation sheets at the end of your reflective essay. Please make sure that the sheets are binned with the reflective essay.

Excellent	Good	Satisfactory	Unsatisfactory	Poor
5	4	3	2	1

	Team Member			
1. Participation	**1**	**2**	**3**	**4**
Attendance	4	5	5	5
Preparation	5	5	5	5
active participation in consultations/discussion	5	5	5	5
responsibility: taking the initiative/being cooperative	5	4	5	5
Fair distribution of workload, meeting one's commitments	5	5	5	5
time management: planning and monitoring	5	5	5	5
communication (listening, feedback, argumentation); contribution to the work atmosphere	5	5	5	5
structured consultation (proper allocation of tasks chairperson and minutes secretary)	5	5	5	5
internal communication	5	5	5	5
3. Problem-solving skills				
gathering, contributing and using information	5	5	5	5
making deliberate choices	5	5	5	5
Creativity in terms problem-solving	5	5	5	5
Asks appropriate clarifying questions	5	5	5	5
Is open minded and mindful of alternatives	4	5	5	5
independent judgement– judges well the quality of an argument including reasons, assumptions and evidence	4	5	5	5
critical-reflective attitude	5	5	5	5
Formulates plausible hypotheses	5	5	5	5
Plans and conducts experiments well	5	5	5	5