Designing, Developing and Implementing an Entrepreneurship Program

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I. Abstract

Innovation and entrepreneurship are among the top competencies required to succeed in the 21st century. At Wentworth Institute of Technology, we foster these competencies through interdisciplinary, project based learning. While our traditional academic courses and programs have proven excellent in providing a solid foundation of subject matter content, they lack the robust interdisciplinary education needed by graduates who will make an impact on the world. In order to foster a higher order of innovation and entrepreneurship on campus and to prepare our graduates to build successful personal and professional careers, the authors introduced a program called Accelerate in May 2012 for students to turn their ideas into reality. This paper and presentation describes an innovation and entrepreneurship initiative at Wentworth.

II. Introduction

The Partnership for 21st Century Skills emphasizes […] innovation skills […]" among others as essential to prepare students for the complex and fast-paced environment of the 21st century[1]. A recent global leadership forecast conducted by Development Dimensions International of over 14,000 leaders from 74 countries, lists innovative and creative thinking as one of the top five critical leadership skills of the future[2].

Worldwide discussions are taking place to assure the positioning of our future workforce for the 21st century and entrepreneurship plays an important role. "Entrepreneurship refers to an individual's ability to turn ideas into action and it includes creativity, innovation and risk taking […]"[1]. Penã et al. also reference entrepreneurship relevant to interdisciplinary education: "Among the educational disciplines deemed important to the nation, entrepreneurship education can facilitate moving the discoveries, innovations, and insights of the other disciplines into the American economy[3]."

In 2010, Wentworth conducted a Next Gen survey of over 1300 of our students. We found that 21% were planning to form their own company. Fifty-two percent, of them, were students studying engineering and technology, where problem based education fosters critical, creative, and innovative thinking. At that point, Wentworth did not offer support for these students interested in forming their own companies. However, entrepreneurship is a mindset not only applicable to those launching their own companies, but relevant for anyone seeking to reinvent, improve and advance in any organization. We realized these are qualities applicable to all of our students. At Wentworth, education centers on interdisciplinary, experiential, and project-based learning. While these are an integral part of Wentworth's curricula, an extended and more disruptive approach was required to diminish the silos among disciplines and further allow students to test themselves, push their ideas and learn as much as possible in a short time within the microcosm of the program. The Accelerate program, an innovation and entrepreneurship challenge, was launched in May 2012 as an extra-curricular endeavor open to all students from all disciplines.

The following section describes the four phases of Accelerate, its goals, the Pitchfest, the teams that received funding, how far the initiative has progressed, support it has received by the college and the local innovation and startup community.

III. What is Accelerate?

Accelerate is an innovation and entrepreneurship challenge for students which cultivates their innovative and entrepreneurial mindset by promoting interdisciplinary project based and collaborative engagement among students, alumni, industry and the extended community in the city.

The focus of the Accelerate program is the learning experience with the goal to immerse students within a short period of time to knowledge and content relevant to becoming an entrepreneur and pushing their ideas as far as possible while still in college. Our hope was that the experience will increase the likelihood for them to either engage in startup environments after graduation or time-lapsed at some point in their career. The European Union found in a study that "the likelihood that entrepreneurship alumni will participate in a business start-up is substantially higher and the frequency with which they set up businesses seems to be higher and they become self-employed earlier in their careers. In addition, the enterprises run by these individuals are perceived as more innovative and the expectations regarding employment growth is higher.[4]"

One of the entry criteria for student teams to participate in Accelerate is that team members must be from different majors. During the first iteration of Accelerate, in the summer of 2012, only one third of the student population, all juniors and seniors, are on campus. The possibility to provide a collaborative and entrepreneurial experience for them would certainly be different from their normal set of courses and allow them to directly apply their education to their own emerging startup ideas. Since juniors and seniors represent about 35% of the total enrollment of the college, we believed we had a student population receptive to an innovation and entrepreneurship challenge. Students who participated would become immersed in innovation, business planning, risk taking, networking with mentors, alumni and the local startup community as well as strengthening their team building, critical thinking and problem solving skills.

For some, but not all, the goal will be to launch a business. However, the process and content students will be exposed to is critical. Some of the key aspects include:

- Networking with alumni and industry
- Mentoring from alumni and fellow entrepreneurs
- Immersing and learning about starting a venture, innovation, business planning
- Attending events and workshop conducted by professionals supporting startups or entrepreneurs
- Access to internal (faculty) and external experts
- Building competencies for life, e.g. team building, critical thinking, problem solving, risk taking
- Excellent addition to a resume and increased employability as entrepreneurship is a quality in demand
- Turning ideas into reality and creating a future

In order to attain these goals, the Accelerate program was designed with four phases – Kickstart, Develop, Build and Takeoff.

Phase 1 – Kickstart

During this initial phase extensive outreach was conducted on campus. The authors were able to hire a coop student who visited classes and spoke to over 1100 students in the first few days of the summer semester. Points that were emphasized and discussed in the classes during this phase were:

Forming the Idea - Students may have had an idea all along. Some of the student design projects may have gotten them interested in a specific problem and they were determined to find a solution. In some cases, students did not have an idea but wanted to be part of a team that does some "cool" development and have a positive impact. Students were encouraged to learn about Accelerate as a potential catalyst for them to turn their ideas into reality in one of the information sessions.

Assembling and Recruiting the Team - A diverse team produces better results than an individual. Students were asked to assemble diverse teams with individuals in other disciplines. Some students already had their team assembled, but others still needed to source the right talent. A "recruiting and networking" event was introduced where teams could scout talent. Individuals could also see what ideas are out there and if they would be interested in joining an existing team. As an alternative, a web-form was developed that teams and/or individuals could submit to find their "match". Later, we channeled our students to existing online platforms such as ePowerhouse [www.e-phouse.com] that would position the search for talent beyond our college's walls. Oftentimes, the need for talent emerged well after the Kickstart phase and so the recruiting process became an ongoing endeavor where students gain valuable experience conducting and participating in recruiting conversations.

Submitting the Idea – Student teams were asked to indicate what kind of idea they were looking to explore by filling out a basic submission form. This form also signaled that they are interested in the process and committed to learning about innovation and entrepreneurship. The five basic questions that were asked were:

- What is your idea about?
- Which problem does it solve?
- What impact does it have?
- What are the milestones to make your idea a reality?
- List everybody on the team (Including their major).

After the Kickstart phase the teams were ready to take the next step in developing their ideas.

Phase 2 – Develop

Once the ideas were submitted, the second phase was initiated. This phase focused on the development of a business model, learning as much as possible about innovation and entrepreneurship as well as soliciting input from individuals that have been there.

Meeting Alumni or Expert Faculty - The teams were connected with professionals, alumni, and faculty, who have experience in the industry or field of the team's idea. The function of the experts were to laser focus the ideas, challenge student teams' ideas, support the framing of the idea and help the teams develop a business plan.

Creating a Business Plan – A business plan road map with guiding questions was developed to give the students insights as to what it takes to form a startup, such as target audience, market segment, business model, financials, consumer insights, competition, etc. with the goal to prepare them to pitch in front of a panel of judges, who will evaluate their idea validity based on the following four areas:

1. Solution
2. Impact [Innovation, Market, Value to Society]
3. Business Model [Milestones, Potential for commercialization, Feasibility, Financials]
4. Team constellation

In addition, an extensive program has been developed for each student team to attend presentations, workshops and office hours with alumni and other experts from industry and within the startup community. The intent of the business plan was to raise critical questions surrounding the relevance of their idea in the marketplace not to submit an extensive plan. Besides the content, it is enabling the teams to network and build relationships with industry and learn as much as they can about taking an idea to realization, launching a business, taking risks, and being an entrepreneur.

Pre-Pitching the Venture – Judges will be drawn from our alumni pool and external industry professionals who live and breathe innovation and entrepreneurship. To prepare students, pre-pitch sessions were offered, where they could practice their pitches with mentors, who helped refine and guide them in addressing their gaps and concerns. Section IV describes the actual Pitchfest.

Phase 3 – Build

In the "Build" phase, funded teams had up to one year to build their prototype. If the team was not funded, they were encouraged to continue to learn, refine and iterate their ideas and try again in the next semester. Funded teams proceeded through the next steps.

Receiving One-on-One Mentoring – Teams were paired with alumni who had a high level of expertise in the industry and/or function related to their idea. The wealth of insight alumni contributed to the process has been incredible for the students who were learning from a successful entrepreneur. At the same time, the mentoring has allowed alumni to come back to campus and engage with their Alma Mater. In turn, the college was able to expand its outreach into industries.

Building a Prototype or Proof of Concept – Teams worked on their design under the guidance of a mentor to build a prototype or proof of concept. Guidance was given through all phases of the prototyping process such as identifying exactly what problem the team is addressing, criteria and

constrains, ideate/brainstorm possibilities and exploring their viability, selecting an approach, build encouragement, while learning everything about starting a business.

Phase 4 – Takeoff

The focus of this phase was to allow students to position themselves within the city's broader community, but at the same time share the results of the Accelerate program within the college. This assisted with the recruitment of new students into the program and also positions the program as a viable player in the city environment and among other colleges.

Presenting to the Community – All teams, funded and non-funded, had a chance to present to the college and external community, which included venture capitalists, fellow entrepreneurs and others in a poster session and networking event. Over 120 people attended the first event of this nature in the fall 2012 and brought diverse backgrounds, input and feedback to the student teams to fuel future developments.

More Learning Out in the World – The process does not end when a student graduates from the program. A conscious effort was made to introduce students to the city's ecosystem and learn more about funding opportunities as well as the incubators or accelerators in our city's innovation district.

IV. The Pitchfest

The Pitchfest is a critical milestone for the teams, and also functions as a connective tissue to the internal and external community. Fifteen teams and over fifty students participated in the first iteration of Accelerate which occurred during the summer 2012 semester. Ten teams pitched in front of judges in this first Pitchfest (June 28, 2012) and five teams were funded for a total of $29,000. The funds allowed teams to build their prototypes and continue to test the market. The judges awarded Pelkey Design, who re-engineered the Pedicab (shown below) $10,000. The unfunded teams were encouraged to continue to work on their ideas, refine them, solicit more input from potential customers, continue to attend workshops, and utilize Accelerate as a mentoring and networking platform in the fall.

After this first iteration, it became clear that Accelerate had struck a chord with the college community. We were able to triple interdisciplinary teams to 45 and doubled the number of students involved in Accelerate to over 100 for the second iteration in the fall 2012.

In the second Pitchfest, November 16, 2012 fifteen

teams pitched products and services ranging from portable backpack speakers to an environmental consulting firm. With a $10,000 award on the line, students were forced to demonstrate how far they had come in the last six weeks of workshops, mentoring, and networking, and make their case for funding.

The Institute awarded Gentoo with the top award of $10,000. The team designed a "portable infusion harness," (see figure left). The idea was inspired by one team member, a biomedical engineering student, who saw all of the bags and devices her aunt, currently battling colon cancer had to carry with her as part of her chemotherapy treatment. She worked alongside students in industrial design, electromechanical engineering, and management to design what the team envisioned into a fully functioning reality.

Four other teams were awarded with $6,000, $5,000, $3,000 and $1,500 with projects that included: a nail polish organizer "Simply Stored"; portable speaker backpack "Jimmy"; a firm specializing in longboard design "S-thetic"; and "SmartPump", a high-tech insulin pump respectively.

In the third iteration of Accelerate, which started in January of 2013, 32 teams submitted their ideas and nearly 70 students participated. At the time this paper is being submitted the students were preparing their business plans and getting ready for the Pitchfest set for April 9, 2013.

Thus far, the funds for the Pitchfests have been provided by the college. However, a strategic task force was formed to establish a plan for sustainability and growth for Accelerate and an innovation and entrepreneurship center.

V. Acceptance by the Community

The campus community immediately embraced Accelerate. The support received has been incredible. Over 60% of all offices on campus supported the quick launch of Accelerate within only four weeks during April and May and enabled the first iteration in the summer. Offices ranged from Student Affairs, Housing, Physical Plant, to the Copy Center and many more. Faculty members allowed the Accelerate co-op student to come into their classes and pitch the Accelerate program for five minutes. Faculty members also volunteered to participate as mentors to the teams as well as offering up their industry connections. Staff members approached the Accelerate staff to see if they could volunteer for any of the events or workshops or support the

outreach to the city. An intentional effort was made to participate in innovation and entrepreneurship events in the city to learn from other colleges, startups and individuals as well as to network and source connections to help us build a sustainable model.

To date over 80 individuals have been workshop leaders, mentors, or judges. We have received very positive feedback about the quality of the ideas the students generated. Our differentiation factor within the city's ecosystem is that we are an engineering and design school and our students are highly sought after as they are able to realize and build their ideas. As a result Accelerate and the teams received over ten mentions in the local national newspaper and leading innovation blogs within only seven months of its launch.

VI. Innovation and Entrepreneurship Center

During the fall 2012 semester, Accelerate was able to secure 2500 sq. ft. of space on campus so that students will have an area where team members can meet among themselves or with external representatives, exchange ideas, develop and build their prototypes - the initial home for a Center for Innovation and Entrepreneurship. A Center is both a location and a mindset. It raises college's visibility and outreach into the market, engages industry and alumni on a solution level while building an integral and vibrant community for the students. The goal is to increase the size of the Center's space tenfold thereby enhancing the students' learning experience and ensure they are immersed in professional collaborations with students from other disciplines and allow them the chance to hone their competencies and skills critical for the 21st century work environment such as collaboration, communication, critical thinking, problem solving, product/service/self-branding, relationship building, diversity, creativity. In addition, students in an environment experiencing real-time process management/improvement, product life cycle development, managing client satisfaction and expectations, delivery on time/budget, and product positioning/marketing.

Why a Center?

A Center is a logical extension of blending the college's already existing strengths and channeling them towards achieving higher market visibility, branding, recognition, and enhancing industry relations. The influence on the existing organizational culture cannot be underestimated, generating a sense of pride and ownership among the existing students and a compelling attraction to prospective students. The very practical side is the strengthening of student's employability by fostering student growth opportunities, expanding their horizons, exposing them to diverse environments, and accelerating their holistic education. In addition, these initiatives directly link career preparedness to predicted initial job success upon career entry as well as increase their professional visibility to potential employers for coop, job entry, or graduate full-time education. Students at all levels are encouraged to participate and engage in the innovation lab to expand their learning experiences from the first semester to senior year. As students move through an innovation and entrepreneurship environment they can increase their responsibilities by moving from team member to managing small project teams. Thus, the Center is designed to foster interdisciplinary, project based, and collaborative activities with internal and/or external constituencies which can bring together cross-curricular interests and projects that may occur in three different formats: (1) integral part of the curriculum, (2) extra-curricular projects among departments and/or subject matter areas, (3) projects focusing on outside firms/companies that have 'backburner' projects.

VII. Summary

Innovation and entrepreneurship can change the mindset at a school that concentrates on engineering, engineering technology, computer science, architecture, design, and management, which are normally very siloed disciplines. Within only four weeks a program was built from the ground up for the students, launched in a summer semester, and now it is beginning to change the campus culture. Accelerate is a true startup within a college environment.

The biggest reward, however, is the feedback from the students. Some mentioned that "it changed their life", "Accelerate altered my thinking forever", and "it gave me the confidence to know that I can launch my own business." This is what it is about – the entrepreneurial mindset, no matter what the future holds for the students.

VIII. References

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