Training the Archer:

Accelerating Student Changemaking Through Testing Assumptions

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ABOUT THE TRICO CHARITABLE FOUNDATION

Established in 2008, the Trico Charitable Foundation seeks to close gaps in society by provoking innovation and building capacity in social entrepreneurship. Its work focuses on the Canadian context through four key areas: 1) local capacity building tools and funding for non-profit social enterprises in Alberta; 2) a biennial Social EnterPrize, which celebrates mature Canadian social enterprises (for profit and not-for profit) and commissions case studies on the recipients; 3) The World of Social Entrepreneurship, an annual event in partnership with the local community that brings some of the best and brightest examples of social entrepreneurship from around the world to Calgary; and 4) nurturing social entrepreneurship in Canada's post-secondary institutions.

ABOUT THE INSTITUTE FOR COMMUNITY PROSPERITY

As part of Mount Royal University's commitment to providing an extraordinary experience for undergraduate students, the Institute for Community Prosperity connects students with social impact learning through applied, community-partnered research, creative knowledge mobilization and systems-focused education. The Institute designs and hosts learning experiences to help students lead transformative change in their communities.

ABOUT RECODE

As a funder, capacity builder and convener, RECODE - a project of the McConnell Foundation - supports the capacity of schools to weave social innovation tools and practices into the very fabric of campus and community culture. Through working groups and national gatherings, RECODE brings together individuals in post-secondary to learn from each other and amplify their social impact.

ABOUT THE AUTHOR

Alexandra Daignault is a 2018 graduate of Mount Royal University (MRU), where she Majored in English, and Minored in Indigenous Studies and Innovation & Entrepreneurship. A recipient of many awards and scholarships, including being honoured as a 2018 American Express Leadership Academy Emerging Innovator, she has presented at numerous conferences and workshops across North America, and has been an active member of the MRU student body. Alexandra has worked as a summer student at the Trico Charitable Foundation, as a Community Outreach Coordinator with the YMCA, and as a volunteer with the Alex Community Food Centre and Calgary Reads. She currently owns and operates a social enterprise called Sarjesa.

> *"But it is important to remember that building a toolkit is more than just putting arrows in your quiver. It is about learning, over time, through disciplined practice, how to become an archer."*
>
> Peter Senge, Hal Hamilton and John Kania
> in "The Dawn of System Leadership" (2015)

The Archer's Stance: Learning Our Way Into Social Impact

This report sets out to understand if, and how, Canadian post-secondary students might be using tests, experimentation and effective learning to advance a social or environmental cause they are passionate about.

Education has changed greatly over the past thirty years, challenged by new learning techniques that have fundamentally changed the way we can access knowledge, individually and collectively. While much of the educational paradigm we inhabit still involves rote knowledge transmission and memorization - students sitting in desks, memorizing theoretical models, facts and figures until they could repeat it back sufficiently - much has also changed: Today we are embracing a more "hands on" blended, experiential and inquiry-based learning approach, where students acquire knowledge by moving through and interacting with the world around them.[1] Accompanying this shift, we are starting to see more courses and activities in design-thinking, entrepreneurship and social innovation. While many social scientists may have concerns about the rise of innovation approaches within the academy, they may be heartened by the call in this analysis for students and educators to apply more critical 'scientific' mindsets and methods in changemaker learning. Testing, experimentation and effective learning are necessary to avoid path-dependent, solution-specific learning paths, which may not only be ineffective, but in their worst forms can bring harm to people and communities.

These primary shifts and movements within the education system are impacting both the practice and discourse of what we might call "social leadership" or "changemaking." In the same ways that traditional education is transforming, so must social impact education transform. As noted by Dr. François Bonnici,[2]

"social impact educators are increasingly coming up against the limitations of their existing systems, which were built in an era of increasing specialization and to serve the production of knowledge, not its application. Some educators are starting to change these systems, disrupting and innovating from within."

While the shift may be more pronounced within the primary and secondary school environments, we are also beginning to see this shift within post-secondary and within academia,[3] frequently in academic environments that have their roots in community-college or polytechnic applied learning environments. As well, the discourse of social entrepreneurship, as a form of changemaking, appears to have emerged simultaneously in both the systems-focused social innovation discourse and in the venture-focused social enterprise discourse.[4]

As social changemaking continues to grow as a global movement, it is benefitting from more attention at the post-secondary level. As Zaid Hassan notes:[5]

"[changemakers] are a new breed – they're not simply scientists or academics, and neither are they activists or entrepreneurs. They're all of these things and a few things we don't have good names for yet."

Since the opening of the Skoll Centre for Social Entrepreneurship at Oxford in 2003, there has been a rise in programs on campuses that blend social impact education with entrepreneurship - and we are now seeing social innovation and changemaking courses become integrated into business education.[6] With the creation of new social entrepreneurship or social innovation academic programs, campus social venture incubators and accelerators, university-partnered social labs, new community-engaged learning models, and national initiatives such as RECODE (in Canada) and Campus Compact (in the US), and international accreditation such as the Carnegie Community Engagement designation and Ashoka Changemaker Campus designation, there appears, on the surface at least, to be a robust emerging infrastructure for supporting student changemakers. However, this growth also means that post-secondary institutions must dig deeper into the core competencies of social

impact changemaker learning. This includes developing practices and methodologies for supporting all stages of innovation, from understanding the complex nature of social and environmental challenges, including human agency and community dynamics, through initial ideation, prototyping and scaling.[7]

This report focuses on how post-secondary students in Canada, who are identified as being on a changemaking learning pathway, identify and test assumptions as part of their learning.

Different Quivers for Different Arrows: Social Innovation v. Social Enterprise

Despite the fact that texts like *Getting Beyond Better* [8] touch on testing and identification of assumptions on a surface level, there is no authoritative body of work dedicated to developing a process specific to social enterprise development, nor, more broadly, to social entrepreneurship or changemaking.

The *social innovation* school of thought and action holds that [9]

"social entrepreneurship is not about generating earned income or even about incremental innovations in the social sector. It is about innovations that have the potential for major societal impact by, for instance, addressing the root causes of a social problem, reducing particular social needs, and preventing undesirable outcomes."

Some students, such as those in policy studies or international development education, are drawn to this school - where a complex melange of public intervention, cross-sector collaboration and broadscale mindset, culture or market shifts may be required. The *social enterprise* school, on the other hand, attributes

more weight to an individual entrepreneur's ability to use business models to affect social change.[10] Students with more of a venture mindset, where this is an identifiable gap or opportunity that can be filled within a short-to-medium term horizon, are drawn to this latter school. Not surprisingly, there are tensions between these schools, though both could undoubtedly benefit from more cross-communication and overlap.

It is important to also distinguish the work and aims of social entrepreneurs from entrepreneurship generally. Social entrepreneurship pioneer Greg Dees wrote that [11]

"social entrepreneurs are one species in the genus entrepreneur. They are entrepreneurs with a social mission. However, because of this mission, they face some distinctive challenges and any definition ought to reflect this."

Indeed, social entrepreneurs, or changemakers, engaged in any sort of social solution, face both the traditional issues of viability and sustainability, as well as issues unique to their social impact. Dees went on to explain that, instead of being motivated by "wealth", the acquisition of capital and resources are sought in support of a central social mission.[12]

The dialogue between these two contrasting and intertwined schools of thought has led to a dynamic and shifting conversation, one that is reflected in academic literature; forming the tentative beginnings of what is now a large and still emerging field of changemaking. Even as the discourse changes, grows, and shifts, some clear patterns, themes and structures in student learning emerge. The analysis that follows suggests that in order to address issues of impact, growth, and sustainability, a combination of social innovation and traditional entrepreneurial tools are necessary.

The way in which the world understands changemaking, both in practice and as a field of intellectual inquiry, is still rapidly emerging, and it will take many voices and perspectives to drive it forward. Continually, scholars, practitioners, changemakers, and teachers grapple with questions like: how can movements, ventures, and other 'solutions' create sustainable impact? What are the key resources needed for a changemaking solution

to thrive? How are changemakers to work through challenges and assumptions integral to their solution? These questions provide fertile soil for the development of theory, discourse and practice around social changemaking.

As an interdisciplinary field, changemaking requires that we cross borders both within our respective disciplines and within the world to create lasting and high-impact solutions to the world's most pressing problems. For example, some of the tools used within the discourse of entrepreneurship may prove of use when tackling the question of working through challenges and key assumptions. In particular, we look to "lean startup" methodology for inspiration.

Placing the Target: Lessons from Lean Impact

Ann Mei Chang served as the Chief Innovation Officer and Executive Director of the U.S. Global Development Lab at USAID. With a background in the world of high tech, she is a major proponent of "lean start-up" as a methodology that has relevance not just for tech start-ups, but also for radical social impact initiatives. In an interview with Eric Reis, Ann Mei Chang the Executive Director of "Lean Impact" notes:

"The traditional approach to global development, and much of the social sector, is to run fairly large size programs that are usually designed in detail upfront, then executed accordingly."

She adds "there's very little room for experimentation, for risk taking, for iteration. You have to stick to the letter of the proposal. That's not a great way to innovate."[13] Chang advocates for the use of small scale, inexpensive tests and experiments to help deepen and leverage social impacts in a way that is parallel to Maurya's "Build-Measure-Learn" loop.

Ash Maurya, drawing heavily on the scientific method, writes: "After the introduction of the scientific method, there was a marked increase in the pace of breakthrough discoveries. Both science and entrepreneurship operate under conditions of extreme uncertainty, so the thinking goes that the adoption of some entrepreneurial method might do for business innovation what the scientific method did for scientific discoveries: dramatically accelerate the pace. This is the core message of the Lean Startup methodology. The closest equivalent to a scientific experiment in innovation is a cycle around the Build-Measure-Learn validated learning loop."[14]

The lean startup methodology is grounded in the process of managing one's learning through feedback and iteration. It attempts to eliminate dangerous solution-specific uncertainties by running tests, collecting feedback, and adapting accordingly.[15] Maurya goes on to explain how scientists "use experiments to validate (or invalidate) their model" [16] – delving into why entrepreneurs need "simple abstractions to help deconstruct the complex problems of building a repeatable and scalable business." [17] He contends that in many ways the disciplines of entrepreneurship and science run parallel to each other, and that businesses should adopt the model of testing and temporarily validating best guesses – adopting them as strategy until they are rendered useless and need to be revisited.[18]

Thus, just like the practice of learning to be an archer, entrepreneurship becomes a continual process of theorizing, testing, learning, and integrating/iterating – allowing solutions, movements, and ideas to accelerate their growth and deepen their impacts in a highly logical and methodical way. These processes and tools can be just as effective within the realm of social changemaking, where testing, measuring and iterating structures for impact become imperative to creating lasting positive impact. To this point, Nogah Kornberg, Associate Director of I-Think, writes: "Success is a student's ability to test their models, understand their limits and modify their understanding as appropriate." [19] As the world of changemaking and social innovation continues to grow, small experiments and tests could go a long way toward

developing social solutions and interventions that truly meet the needs of the communities they serve. Chang writes: [20]

"We need solutions that people really want and [will] embrace, and we need to look at different ways we might go about solving some of these problems and finding one that has the capacity to reach much greater scale and impact in what we are doing today. That's exactly what small experiments are for."

Regardless of the scale of the social intervention or system change desired, small-scale experimentation and testing can serve as a very useful tool.

Drawing the Bow: Our Collaborative Project

Working in a collaborative partnership between the Trico Charitable Foundation, the Institute for Community Prosperity at Mount Royal University, as well as the RECODE network, we designed interview questions to build a strong understanding of how students were learning their way into changemaking. Students were interviewed and recorded by phone. All interviews were conducted in English, reviewed and transcribed by the author. The interview structure was semi closed, with students answering specific interview questions while allowing room for elaboration and anecdote. The goal of this approach was to understand the thought process of if and how students and their social initiatives were hypothesizing, testing, learning, and growing from identifying and resolving assumptions.

Keeping the techniques of various disciplines in mind, the Trico Charitable Foundation has worked to develop a set of resources to assist changemakers in developing their skills and techniques through a disciplined practice of hypothesizing, testing and learning. The goal is to strengthen them as the leaders of social change as well as the social solutions they grow in the world. As a multi stakeholder undertaking, the Foundation developed the

Alberta Social Entrepreneurship Support System: Tools, Links, and Coaching (A.S.E.S.S.: TLC). A.S.E.S.S.: TLC is a set of worksheets, resources, and tools designed to assist and support social enterprises in the process of testing, experimentation, and planning.

The questions for the interviews were largely adapted from the A.S.E.S.S.:TLC tool, which were initially specific to social enterprise development, but have been adapted to also reflect learning needs of both RECODE and the Institute for Community Prosperity. The topics broached within the set of questions were as follows:

→ How students became engaged in the social or environmental challenge they were seeking to address;

→ The length of time each student had been engaged with their challenge of choice;

→ The tools and approaches each student had used or developed in support of their social impact goal;

→ The processes taken to develop or choose these tools;

→ The ultimate and "steady state" goals of their approach;

→ The key assumptions (uncertainties, and unknowns) regarding their approach;

→ If and how students were targeting and resolving assumptions;

→ If the students had received training on identifying and resolving assumptions, and if so what that training looked like;

→ Student predictions and processes of reflection as a means of learning more effectively;

→ How students engaged with processes of consultation;

→ How students were aware of and overcoming their own biases.

"Look for people who have lots of great questions. Smart people are the ones who ask the most thoughtful questions, as opposed to thinking they have all the answers. Great questions are a much better indicator of future success than great answers."

Ray Dalio in "Principles: Life and Work" (2017)

Student Interviews

As previously mentioned, the discourse and practice of social entrepreneurship is in a constant state of flux, providing fertile ground for intellectual inquiry and practice. Additionally, within the sphere of popular culture, "changemaking" is on the rise - with many people deciding to live and work with a changemaker mindset. Yet, as any emergent field, the work is messy, the definitions are porous, criticisms abound, and we have to be careful not to discard the past while discovering new ways forward. In the same way that changemaking requires input from both the social innovation and social enterprise schools of thought, as well as more established fields of inquiry and endeavour, we decided to undertake this work as a partnership between organizations with different theories of change. The shared goal being to understand if, and how, students might be using tests, experimentation and effective learning to move the needle forward on their chosen social cause.

We reached out to faculty from twenty-four campuses across Canada. All of the campuses who were contacted received funding from RECODE, specifically for the development of social innovation-focused programming. Campuses were asked to nominate a student change exemplar who had developed or was working on a solution to a social or environmental challenge.

The team selected ten students all engaged in different aspects of changemaking, to participate in the interview process. The study included Canada's winners and student representatives in the 2017 Oxford Global Challenge [21] which is a global competition that asks student participants to research and describe the ecosystem (including the problem landscape and solutions landscape) of a social or environmental issue they care about.

Interviewees included some students from programs within Bachelors of Arts and Bachelors of Science. However, most were pursuing a Bachelors of Business Administration, Bachelors of Commerce, and Masters of Business Administration degree. All students were deeply engaged within their campus communities and studies; many were pursuing additional certificates, and diverse as well as interdisciplinary minors and concentrations of study. Students were also at various degrees of completion for their programs, as early as their second year of study up to recent graduates and one graduate student.

Unsurprisingly, students were tackling many different social or environmental challenges– some were even tackling more than one problem at once, both directly and indirectly. Perhaps most notably, from the ten interviews, six students were engaged in issues of food or water security - as such, many of the examples in this report relate to food. The social/environmental challenges mentioned also included the following:

- ➤ Issues of student life (on and off campus)
- ➤ Health and Wellness
- ➤ Employment
- ➤ Community Engagement
- ➤ Waste Management
- ➤ Education
- ➤ Environmental Sustainability

Anchoring Our Arrow: Complex Solutions for Complex Findings

Often, students were working on complex solutions to complex and intricate social or environmental problems. On the surface, student changemakers might appear to be tackling a single issue such as food security, yet often their proposed solutions addressed a range of social or environmental challenges - the silver thread of sustainability indirectly linking them all together. For example, one student was working on a solution to textile waste, while simultaneously working toward a goal of providing gainful employment to homeless citizens of her city.

Generally, many of our interviewees had been working on their social or environmental challenge for two years or more; however, some students had been working on their challenge for just under a year and others had been working on their challenge for almost five years. The understanding of the issue, as well as the intricacies of the proposed solutions, tended to correlate to the amount of time spent working on the issue.

Loosening Our Bowstring: What We Found

The Initial Point of Entry: Campus Learning v. the School of Life

All of the students we engaged with credited their school experience as their initial point of entry into the problem context they were working on. Frequently, students encountered these problems, as well as the initial frameworks for imagining a potential solution, within their classrooms or extracurricular experiences. Organizations such as clubs, student centres, and on-campus hubs were cited as spaces of connection where students were able to explore both problems and solutions further. Two of the ten students alluded to lived experience, of the challenge they were working on, as the spark behind their solution.

During our interviews, three main patterns of engagement emerged. The initial point of entry for students was one of three ways: course or project-based research; engagement with on-campus external organizations; or lived experience of the social or environmental challenge.

STUDENTS WHO ENCOUNTERED AND IDENTIFIED THE PROBLEM THROUGH COURSE-BASED OR PROJECT-BASED RESEARCH...

Often, the first seeds of the student's solution or initiative were planted within the context of work terms, group projects, or research competitions. For example, the participants who competed in the Oxford Global Challenge all noted that it was the competition that sparked their desire to seek a deeper understanding and better solution to the challenge they were trying to solve. Additionally, the completion of the competition, although serving as a starting point for both their research and initiatives, has not stopped these students from pursuing further research and solutions.

Work terms and experiences involving group work also served as a catalyst for deepening an understanding of problem contexts. For example, multiple students spoke about their engagement with on-campus supports and classes that sparked their engagement with the challenge they are working on.

STUDENTS WHO CAME TO IDENTIFY THE PROBLEM THROUGH ON CAMPUS AND IN COMMUNITY SERVICE BASED WORK...

Additionally, work with organizations existing on campus but acting as separate organizations, such as Enactus, "a community of entrepreneurial leaders who see business as a way to address social issues," [22] inspired multiple students to push for the creation of social solutions. Despite working with Enactus on international problem contexts, the three students in this vein wanted to work on challenges specific to Canada.

In particular, one student noted that they had obtained experience in international social entrepreneurship from working in Enactus, but wanted to do something for the Canadian context. A second student noted that Enactus served as the catalyst for the solution, but also provided support finding a market or problem context for the solution.

Other students noted university hubs, labs, and organizations as paths to interacting with and deepening their understanding of the problem context and social solution they were working on.

STUDENTS WHO DREW HEAVILY ON THEIR OWN UNDERSTANDING AND THE LIVED EXPERIENCE OF THEIR COMMUNITIES TO IDENTIFY BOTH THE PROBLEM, THE TOOLS, AND OPPORTUNITIES THEY WOULD USE TO DEVELOP THEIR SOLUTION...

Conversely, students who cited lived experience as their

> *"Ultimately the reason to become more innovative is to become more effective, and make a bigger difference more quickly for more people."*

Ann Mei Chang, *Lean Impact* (2018)

entry point into the conversation about the challenge they were seeking to address discussed how they had used the tools/opportunities they had been given in university to really inform their approach. One student noted that:

"I always grew up with our traditional foods and culture, and then, as I got older, I kind of started to realize there are a lot of issues in not only my reserve but in many reserves across Canada" and later stated "[I used] the Oxford Global Challenge and their systems mapping methodology… that [helped me] delve into the research in my community."

The Two Year Tipping Point

Two years appears to be a typical tipping point for students, where they move from information-gathering to the development of a social solution.

Half of the students we spoke to were actively working on gathering information on the problems they were seeking to address. To do this, they were employing a number of tactics such as community consultation and other forms of primary investigation as well as connecting with mentors and other key stakeholders within their field of interest.

Students working on a solution were engaging with community consultation, connection and research so as to aid their specific solution rather than to understand the context of the social problem. These students, as one might expect, often had a clearer self-perceived understanding (i.e. confidence) of the assumptions and goals they were working on.

These different focuses have widely different mindsets and needs, yet both groups were learning from the problem contexts around them to better understand how they might affect change.

TOOLS & APPROACHES USED

The students interviewed used a variety of tools and approaches to tackle social and environmental problems, from building web-based platforms; conducting mixed methods research; dismantling

LENGTH OF TIME	INSIGHTS
4.5 years (one student)	The student had a fully operational social enterprise, and was moving towards scaling.
3 years (two students)	Two students both with operational social solutions. Both of these students were focused on the day to day management of their social solution and the challenges of operating efficiently.
2 years (four students)	This group of students was evenly split with two students operating a social solution and two students focused on information gathering. Students who were actively gathering information on a problem they hoped to solve noted a significant lack of community-specific research, and, as such, were conducting their own ethnographic or other research within the community. Students currently operating a mobilized social solution were engaged with small-scale operations with the hope of expansion in the near future.
1 year (three students)	All of the students in this category were focused on: · Gathering information about the problem or problems they were seeking to address; · Developing a skillset to support social solution building; and/or · Working towards imagining what a solution might look like.

supply chains; to building mechanical technologies to break down textiles. Approaches were as varied and complex as the problems. However, there were three common thematic areas that emerged repeatedly: Community consultation, academic research, and primary research.

Community Consultation

Within the interviews, consultation was an integral part in the development of tools and approaches within student social solutions and initiatives. Students stressed the need to use community consultation as a tool from the beginning, but also even when working on more established projects. One student noted specifically:

"[when] tackling a problem issue, when you look at it, as much as it might appear on the surface to be a huge need, until you actually go in and talk to people in the community you don't actually know what the ground zero is like."

Community consultation took various forms, such as:

- On campus events, workshops, conferences
- Formal and informal outreach
- Facilitating committees
- Student ambassador programs
- Community partnerships
- Corporate sponsorships
- Town hall meetings

Within the interviews, there was a deep understanding of how community voice must be central to any project in order for it to have impact. When speaking to one student they noted that:

"[our community partner] has been extremely kind to us, and cannot be the means to the ends of our research."

This student went on to explain how despite the fact that community-based research and consultation may take longer, it is much more impactful in the long run.

Any approach to solving a social problem must be inherently collaborative.

Academic Research

In addition to community consultation, existing academic research was also deeply informing the student approach. Many of the students engaged with pre-existing research on the different approaches they might take to building a solution. For example, a student engaged in community food security work stated:

"We looked at individual growing, so people could grow at home. We looked at centralized growing, so community focused growing [in] communal spaces like a health or community center; and, [we looked at] different ways to grow food through hydroponics, aquaponics, etc. (…) We identified what would be best for our specific community."

Students were using pre-existing research to inform their understanding of a problem and the subsequent development of their solution.

Primary Research

Where there were gaps in the research available, or no information specific to communities, students were engaging in their own "Frankenstein process" (as termed by one student). Students, within a number of different scenarios, were taking the tools and approaches from a classroom setting and adapting them to the work they were doing within communities as a means of collecting data. These tactics included:

- Building community needs assessments
- Adapting change based frameworks to Indigenous perspectives
- Building frameworks and opportunity funnels
- Conducting mixed methods research projects without a primary investigator
- Conducting environmental scans
- Designing online platforms and then collecting data from it

- Conducting environmental monitoring or science sampling, such as (in one case) soil tests

TOOL IDENTIFICATION & USE

The tools that were chosen appeared to largely rise out of opportunity - students appeared to be choosing tools based on their past experience using different tools, as well as what was readily available and accessible to them in the community. There was no mention of a detailed process of tool selection. One student even noted that he "didn't choose [his tools]; they chose [him]."

Consistently, the tools and approach to designing a preliminary solution rose from organic conversation, observation, and need. Often community partnerships and collaborative solutions came by way of consultation – with students asking questions from community members regarding how a problem may or may not be solved. From there, students would integrate their learnings from the community into the development of their approach.

When faced with challenges in finding a solution, such as soil quality, or a lack of primary research to draw on, students were utilizing their own past experiences and resources to solve these issues as they arose. The issues that arose were often not ones that had been previously predicted, and generally students appeared to take the approach of navigating problems as they arose.

GOALS AND KEY INDICATORS

The creation of goals and key indicators for changemaking initiatives are integral to the development of impact positive processes. Often, social impact is difficult to quantify, as it can be hard to measure. The Trico Charitable Foundation breaks up goal-setting into two main categories.

1. The ultimate goal of the changemaker's efforts

2. 'Steady state' goals (this may or may equal the ultimate goal. It is the state where most assumptions have been resolved and progress appears to be steady)

Ultimate Goals

Despite the fact that most students appeared to have a clear understanding of what they wanted to achieve (ie. reduce food insecurity, reduce waste, etc.), few had numerically quantifiable ultimate goals. Only one interviewee was able to state a clear, numerical goal right off the bat, stating that they would like to expand their initiative to twenty colleges by 2025. Even this goal might have been deepened to include quantifiable representations of impact. Of course, responses varied depending on the social or environmental cause the student sought to address, however some of the responses were as follows:

- "To help reduce food insecurity in Canada"
- "To start a big project or work [in community] or probably both to either start up a farming project or integrate farming with traditional food systems, knowledge and language, in a program to increase jobs and food security."
- "Obviously, we would like to see [our solution] scale across Canada."
- "To bring local food to students"
- "To increase the visible adoption of technology in [my community's] schools."
- "To reduce the amount of waste"

The aforementioned responses suggest a need for greater clarity with regard to goals. Yet, as students were interviewed, and allowed to speak in depth on the topic of goals, some even began to formulate their goals during the course of the interview, moving from a seemingly surface level goal to a much more articulate vision within moments. Examples include:

- "…if I had a number… actually, I think it's eighty six communities who are under these long term advisories, we would like to eliminate the need in these communities."
- "But I mean, we aim to feed entire communities, right? So for our current installation (…) [we are able] to feed 63-70 percent of the community. So I mean, that is kind of the goal we are reaching for: feeding communities."

Perhaps unsurprisingly, the longer the student had spent working on their current environmental or social challenge, the more precise their goals were, such as: expanding their initiatives to 20 colleges in 7 years and having [Northern] communities source 50% of their food locally. Additionally, students who were focused on a single pilot or community seemed to have an easier time articulating ultimate goals.

Steady State Goals

There seemed to be difficulties for students when asked to break down their "steady state" goals, or indicators of progress. Some students seemed to interpret these goals as tasks such as:

- Consulting with specific communities or community members
- Bringing a product to market
- Receiving support from a specific person or organization.

However, still other students provided tools of measurement such as:

- Tracking the amount of attendees at specific events and email inquiries received post-event
- Inquiries received from community members or external organizations
- Feedback from community members, specifically those who are perceived authorities on the social or environmental challenge

A lone interviewee noted that organizational sustainability within their pilot project as a "steady state" goal, where key assumptions, uncertainties, and unknowns would be resolved.

IDENTIFICATION OF ASSUMPTIONS (IE. UNCERTAINTIES AND UNKNOWNS)

There will always be assumptions at the heart of any entrepreneurial or changemaking endeavor; often the success of a solution hinges on the team's ability to identify, validate, and effectively learn from these assumptions. As such, how students are tackling

assumptions within their own social solutions was an important topic to broach. Generally, the assumptions students were able to identify fit into four main categories:

- Research
- Scalability
- Resources
- Readiness

Most of the assumptions that were articulated operate on a high level. Students appeared to struggle with articulating the specific points where a misstep might mean catastrophe for their solution. Often, the next key steps were general goals and aspirations as opposed to technical, nitty gritty steps.

More than one student noted that context-specific research was severely lacking for the social or environmental challenge they were seeking to address, and as such were concerned about assumptions that might be made based on a lack of research. As such, students were relying heavily on their own research and, to a certain extent, "hunches" when developing their own initiatives, leaving themselves vulnerable to assumptions. For example, one student noted that, although there was research on food security being done across Northern Canada, there were no numbers or statistics representative of the community the changemaker was working with. As a result, this student had undertaken the task of writing a report on food security within this area, informed by community members and advisors. After the report is completed, he will be better equipped to build a solution based on the community specific research he is engaging with.

Many students were highly aware that what is effective in one community may not necessarily work in cross cultural or geographic contexts. As such, students identified scalability and growth of their solutions as an assumption, since many of the approaches must be adapted and customized depending on the communities the student changemaker is working with. Approaches may need to be changed based on climate, geographic location, cultural context, and

availability of resources – all hindering the ability of the social solution or intervention to scale quickly. Students whose initiative was at a scaling stage were the minority; However, it appeared to be top of mind for many of the changemakers we interviewed, irrespective of stage.

Many of the student solutions require resources by way of community partnerships, (wo)manpower, and the availability of products, space, and financial supports. This was an additional area where students felt that they had made assumptions. For example, a student working on sourcing local food listed the availability of local foods year-round as an assumption that was fundamental to their solution. Additionally, that the key community partners – such as local shops – will remain operational. These assumptions could deeply impact the solution if this student is wrong. These answers were in response to the questions asked, and it was unclear if the student changemaker was using these assumptions as opportunities to resolve key issues.

One interviewee spoke on the assumption that the political, cultural and economic climate posed a threat to their solution. Essentially, they were assuming that they could affect cultural change through their solution or intervention, or that the community on both a local and national level was ready for such a change. This student changemaker was working on a project involving the uptake of technology within his own home community.

Additionally, some students questioned their own position within their solution, unsure whether there were key allies or competition that might already be engaging within the space. These student changemakers were typically in the ideation phase of their solution.

TRAINING PERTAINING TO ASSUMPTIONS

Within the literature of changemaking, there is definitely an emphasis placed on thoroughly understanding the problem context you are working with. In his TEDx Talk, *Social Change Starts By Paying Attention*, Ken Banks states: "you will never create a meaningful solution if you don't understand the problem." [23] In the same vein, Daniela Papi-Thornton passionately advocates that we move away from focusing our attention and resources on the specific changemaker, and move towards supporting the development of their social impact

through "apprenticing with the problem." [24]

We have all heard the story of the changemaker setting off to change the world, a specific plan in mind, only to find that their proposed solution unleashes a pandora's box of unforeseen impacts due to assumptions the change team carried into their work. Yet, little exploration has been done on how to effectively train students on both resolving or validating these assumptions based on small, cost-effective tests. Zaid Hassan writes about the "nobility of intention" and "lack of realism" that seem to permeate the ideation phase of changemaking; noting that sometimes "[prospective changemakers] do not seem to fully grasp the nature of the challenges they seek to address." [25] Congruently, students working on the ground on their social solution, at least those that we interviewed, understood the high level concepts on assumption and validation; yet, students appeared to struggle with discussing designing tests to resolve and iterate past these assumptions.

Identifying Assumptions

As the discussion turned to effectively identifying assumptions, many students cited a general understanding of how to look for opportunities and build solutions from business courses. Few students listed formal training identifying assumptions often noting that they had attended a one-time workshop, conference or speaker series. A single student noted a thirteen-week lab intensive where the topic was explored. Students, on the whole, appeared to recognize the importance of identifying key assumptions; however, they had received little support by way of how to identify assumptions specific to their solutions.

Students noted that they had sought out additional supports from community organizations, such as the National Student Food Summit; Mental Health First Aid; and Health Change Labs. Additionally, many student changemakers drew on their own knowledge to design, validate, and iterate their solutions.

Testing & Validating Assumptions

Despite this, only one student cited formal training on the topic of using tests and experiments to validate assumptions of hypotheses. Little work had been done

to inform students on the various tests and experiments they might be able to conduct or utilize when measuring the impacts or working through challenges of their solution. Generally, students relied heavily on their own discipline specific skills to mitigate or test challenges within their solution as they arose. For example:

- A student with science related experience was able to use their prior knowledge to test the soil quality of their food security solution. This impacted what they were able to grow

- A student with prior experience using needs assessments was able to design their own for the purposes of their community research - this allowed the student changemaker to truly validate the community need and hone in on the appropriate solution

- A student with a background in statistics was able to harness their knowledge as a tool when collecting data

Resolving Assumptions

Most students did, in fact, state that they were currently engaged in actively trying to resolve an assumption. However, few of these students had methodically mapped out their assumptions and specifically targeted one to solve. Rather, the assumption rose organically out of a challenge that the solution or entrepreneur was currently facing. When thinking through testing, as a proactive form of learning and problem solving, one wonders if the challenges currently faced by these student changemakers might have been anticipated and potentially solved with prior supports.

Students were attempting to resolve their assumptions in a number of ways including:

- Consulting with community members. (Eg: a student running a greenhouse consults with community on what should be grown - with the goal of ensuring that the community actually desires the produce that is grown in the greenhouse.)

- Consulting with entrepreneurial mentors. (Eg: students consulting with businesses and university instructors of entrepreneurship on how to design and build their solution.)

- Consulting with other students, professors and academics. (Eg: a student that is currently writing a report on community food security is working with a professor to develop a research methodology.)

- Consulting with government partners, as well as institutional and local stakeholders. (Eg: students working with local organizational and governmental partners to align their solution with the work that is already being done in community.)

PREDICTIONS AND PROCESSES OF REFLECTION

Within disciplines such as psychology and the physical sciences, it is commonplace to make predictions regarding the outcomes of both assumptions and assessment. In this analysis, we wondered if students working in changemaking were engaging with their assumptions and tests in the same way.

Walter Frick notes "decision making requires both prediction and judgment". [26] It is imperative that changemakers, he argues, make strong decisions based on clear predictions and judgment. The purpose of this is to make decisions based on seeing the problem clearly, through analysis, as opposed to an "inside view" which is "where the specifics of the decision overwhelm your analysis". [27] By having clear predictions, one can avoid bias and effectively measure and integrate learnings from tests. It is also helpful when identifying key assumptions integral to the success of one's social solution.

Predictions

Roughly half of the students were able to make predictions for their social solution, however none of these predictions included numerical data. These predictions were made during the interview. Predictions included, but were not limited to, the following:

- We are hoping that this project… will show

a need for localized food production on reserve, and that we can start producing and growing our own fiber, dye, and medicinal crops. We are hoping, or at least I'm hoping, that through this project and through this research that it will highlight the need for more First Nations people to do their own research on their own communities for the benefit of their own communities.

- We predict that there is going to be a short term need that we can solve and get the product to market in time to solve that need.

- We predict that [our organization] will remain in operations contingent on our manager's ability to execute on it and adapt to its changes. [We predict] that it will grow significantly.

- I predict at least some level of success

When asked if these predictions were written down, only two students had previously recorded the predictions as a means of measurement. Students made no mention of how they might use predictions to avoid the issue of hindsight bias. Most groups specified that they had many group discussions and were keeping these predictions in the forefront of their thoughts.

Prediction Based Adaptations

Most students specified that they had not thought about how they would adapt or change their solution or initiative based on resolving assumptions. A number of students mentioned that they would likely make changes depending on what the results were. Some of the ways students suggested they might change their solution included:

- Their plans to scale their solution across communities

- The message they were using to communicate their initiative

- How they would reach more people

- How their approach needed to be refined, or what further research was needed

As far as the preceding assumptions were concerned, few students had mapped out the next assumption they would tackle. Only two students were able to provide the key assumptions they would tackle in their next steps.

Expert and User Validation

A key way that changemakers tackle the resolution of assumptions is through the process of consultation. As the saying goes, *"nothing for me without me"* many changemakers call on both the communities they serve, their own communities, and the people / resources around them to tackle large issues. This allows them to catch their own blind spots, biases, and assumptions before these can cause too many problems. In general, the students that we interviewed were engaging in the process of consultation. Typically, this involved seeking guidance from faculty, students, academics, mentors, and community members. These consultations took the form of:

- Mentorship

- Committees / Advisory panels

- Town halls / Community conversations

- Student support teams

The range of what these consultations covered was vast and varied. Some students sought consultation on topics such as:

- Funding

- Methodology

- Proposal design

- Iteration feedback

- Community outreach

- Messaging

- Channels

"Social innovators and their funders should aspire to transform the status quo by starting with a low-resolution, cheap prototype. While it won't be highly successful, it will produce learning for the next prototype and the next and the next. In other words, each successive prototype, will, effectively, de-risk the bet. The bet will get bigger but less bold."

Roger Martin in "Bold Bets for Social Change"

- Frameworks
- Next steps
- Organizational specifics (example: what to grow in your greenhouse)

Students really valued the advice that they were being given, often integrating it directly into the work they were doing. As one student described the importance of integrating a wide range of perspectives in this way:

"You can get narrow-minded when you have a solution, so having a diverse set of students has helped us take a step back."

Another student noted, on the topic of community consultation:

"[The community's] advice is the most important thing to do. They know the system that they are working in a whole lot better than we do."

Typically, students were using the advice they were given in a number of ways from both a high level and on the ground perspectives. For example students were using the feedback to:

- Change the produce grown in their facility
- Change the content of their workshops and messaging
- Ask better questions
- Transition team members
- Scale pilots
- Build connections
- Drive the direction of research

The goal of these changes appeared largely to be creating deeper impacts while scaling and managing the organization in an efficient and timely way.

COGNITIVE BIAS AND BLIND SPOTS

Many start-ups and social movements alike appear to fail prematurely. However, there is comparatively little discussion as to why this happens and what can be done to fix this. Lovallo and Kahneman write: [28]

"We don't believe that the high number of business failures is best explained as the result of rational choices gone wrong. Rather, we see it as a consequence of flawed decision making. When forecasting the outcomes of risky projects, executives all too easily fall victim to what psychologists call the planning fallacy."

Perhaps this view might be applied more broadly to changemaking initiatives - where scholars like Zaid Hassan, Ken Banks, and Daniela Papi-Thornton all note the need to really understand a problem before diving into a solution.

There are many forms of bias: self interested; affect heuristic; groupthink; saliency; confirmation; availability; anchoring; halo effect; endowment effect; optimistic bias; disaster neglect; and loss aversion, for example. [29] Daniel Kahneman and his team have created a tool to help understand the way biases may be influencing projects within the world of business. Yet, how often do we apply these terms to the discourse around changemaking? How are changemakers at large negotiating these biases to create true and lasting impact? Discussion of these specific biases was noticeably absent within our interviews - suggesting that perhaps student changemakers are engaging with the concept of bias without the support of taught techniques for understanding and assuaging them.

In our interviews, when asked whether they had any concerns regarding the presence of cognitive biases in their work most students, with a few exceptions, were aware of the presence of biases. However, few students were able to identify explicitly the biases they might succumb to. Overwhelmingly, students noted that they hoped to overcome biases through the process of consultation. This included consultation with community members, advisors, and other students.

The students who were not worried about bias either believed they had adequate consultation to see past their biases, or believed that *"if [they] knew of [their] biases they would no longer be biases"* (as one student framed it).

Two student interviewees stood out in their discussion of biases. The first interviewee states that academic and economic bias (as a university student) could often be found at work in the processes of community-focused work, and it was important to be aware of that fact. The second student noted that they constantly had to remind themselves to be neutral in the way they lay out facts as well as be critical of their methodologies.

Follow Through: Learning Through Practice and Next Steps

LEARNINGS & CONSIDERATIONS

This assessment rose out of a need to better understand the ways that students are effectively learning their way into changemaking and innovation. The Trico Charitable Foundation defines "effective learning" as the process of undergoing two crucial steps:

1. Breaking down a proposed solution into its key uncertainties or unknowns (i.e. its key assumptions);

2. Using experiments or otherwise acquiring knowledge that works through and resolves these key assumptions in the most efficient, fastest and effective way possible, thereby confirming the predicted path to the solution, or showing what different actions must be taken to address the challenge.

The absence of an authoritative literature on the topic of "effective learning" suggests that, although students were aware of the need to effectively identify, test, and resolve assumptions as a means of thoroughly understand the problem context, there is a gap in how students are being taught to engage with these processes.

CONCLUSION

The problems we face in the world today might seem like a metaphorical Hydra, a large and many headed snake from Greek mythology. In our fear and rush to solve the problem, it is easy to fall into the trap of reactivity, solving problems as they arise. We cannot forget that in one version of the story, Hercules kills the Hydra through disciplined strategy, then dips his arrows

in the monster's blood to make his weapons stronger. In this same way, changemakers can learn much from the disciplined practice of testing approaches, assumptions, and predictions - using their learnings to make their approaches stronger. This includes not just testing and verification tools familiar to social scientific inquiry, but also lean and rapid tools of assessment, as well as understanding methods of facilitating community engagement and modes of ethical inquiry into community experience, knowledge and wisdom.

The field of changemaking is still emerging and there is much still to learn. Like the discipline of archery, it is not about collecting or committing knowledge to memory and then moving out into the world - instead it is about learning through discipline and practice within the complexities of the real world. The problems facing the world today are messy, and the solutions deeply interdisciplinary. They cross borders, demographics, and many other great divides. It stands to reason that our changemaking efforts, born from dialogue between disciplines, must act as bridges between communities, disciplines, and toolsets.

The findings of this report suggest that there may be a gap in how students are taught to effectively learn their way into changemaking or leadership based on predictions, tests, experiments, and integrated learning. Zaid Hassan writes that despite the surge in uptake for social solutions, "the underlying problems continue to grow." [30] He goes on to explain how we might apply the same practices we use for solving scientific challenges to the world of changemaking - his avenue of choice is through social labs (also called change labs), beautifully blending science and entrepreneurial thinking.

Instead of focusing on building the biggest and boldest social impact solutions, perhaps we should be training our changemakers to start small, dig in, and build up?

As a naturally iterative process, the practices of testing, measuring, and learning within the discourse of entrepreneurship might be applied more widely to the world of social impact. Paul Michelman writes: [31]

"Learning is the unit of progress in entrepreneurship. It's more important than

making money, getting customers, building features, or engineering technical quality. Of course, those things are important, but only insofar as they contribute to learning what creates value and what creates waste…. At the outset, waste is anything that doesn't contribute to the learning."

There are limited resources available to changemakers, such that how we manage these few resources then becomes of paramount importance. Changemakers can make the most of the resources they are given by learning how to observe, predict, and test effectively, integrating their learnings to strengthen their social solutions. As noted by Eric Ries: [32]

"What differentiates the success stories from the failures is that the successful entrepreneurs had the foresight, the ability, and the tools to discover which parts of their plans were working brilliantly and which were misguided, and adapt their strategies accordingly... The modern rule of competition is whoever learns fastest, wins."

Teaching student changemakers how to adopt effective learning and embrace social impact as a continual process of experimentation and iteration, will enhance the arrow's trajectory and deepen the impact of their work.

End Notes

1   See, for example, Adams Becker, S., Cummins, M., Davis, A., Freeman, A., Hall Giesinger, C., and Ananthanarayanan, V. *NMC Horizon Report: 2017 Higher Education Edition* (2017). Austin, Texas: The New Media Consortium.

2   Dr. Francois Bonnici. "Why Social Impact Educators Should Disrupt Their Own Systems." Education. *The Stanford Social Innovation Review* (2016), para 2.

3   Scaled Purpose, *Where to Begin: How Social Innovation is Emerging Across Canadian Campuses*. Institute for Community and Prosperity, Mount Royal University, 2016.

4   Gregory J. Dees and Beth Battle Anderson. "Framing a Theory of Social Entrepreneurship: Building on Two Schools of Practice and Thought," *Research on Social Entrepreneurship: Understanding and Contributing to an Emerging Field*, Association for Research on Nonprofit Organizations and Voluntary Action, 2006. 40.

5   Zaid Hassan. "Introduction." in *The Social Labs Revolution: A New Approach to Solving our Most Complex Challenges*, Oakland: Berrett-Koehler Publishing, 2014. 1-2.

6   Daniela Papi-Thornton and Andrea Warriner. "Shaping Social Impact Education Through Collective Wisdom." Education. *The Stanford Social Innovation Review.*

7   Papi-Thornton, "Tackling Heropreneurship," para 6.

8   Roger. L Martin and Sally R. Osberg. *Getting Beyond Better*. Boston: Harvard Business Review Press, 2015.

9   Dees and Anderson, "Framing a Theory," 46.

10   Dees and Anderson, "Framing a Theory," 46-48.

11   J.G. Dees, *The meaning of "social entrepreneurship"*. Comments and suggestions contributed from the Social Entrepreneurship Founders Working Group. Durham, NC: Center for the Advancement of Social Entrepreneurship, Fuqua School of Business, Duke University (1998).

12   Ibid.

13   Eric Ries. "Lean Impact : Innovating for Social Good." *LinkedIn* (blog). 16 Mar, 2018.

14   Ash Maurya. "The Art of the Scientist." *Love the Problem* (blog). Medium, June 8, 2016. blog.leanstack.com/the-art-of-the-scientist-2537a0ccd784, para 1-2.

15   "Lean Startup Methodology." *The Lean Startup*, n.d.

16   Maurya, "The Art of," para 9.

17   Ibid., para 10.

18   Ibid., para 12-14.

19   Nogah Kornberg, "Reimagining Social Impact Education." Blog. Calgary: Trico Charitable Foundation, 2017.

20   Ries, "Lean Impact: Innovating," para 12.

21   Now called Map the System Challenge.

22   Enactus. "Home." *Enactus.ca*, n.d., http://enactus.ca/

23   Ken Banks. "Social Change Starts By Paying Attention." *Tedx Talks*. Filmed September 2016, Youtube video, (timestamp). Posted Oct 24, 2016. https://www.youtube.com/watch?v=QNkJbPLkvDc

24   Papi-Thornton, "Tackling Heropreneurship,"4.

25   Hassan, "Introduction," 5.

26   Frick, Walter. "3 Ways to Improve Your Decision Making." *Harvard Business Review*. 22. Jan, 2018. Para 1.

27   Ibid., para 10.

28   Dan Lovallo and Daniel Kahneman. "Delusions of Success: How Optimism Undermines Executives' Decisions." *Harvard Business Review*, 81 (7), 2013.

29   Shane Parish. "Read This Checklist Before You Make Any Decisions." *Farnam Street* (blog). *Business Insider*, 24 Jun, 2011. businessinsider.com/read-this-checklist-before-you-make-any-decisions-2011-6, para 5-16.

30   Hassan, "Introduction," 1.

31   Trico Charitable Foundation. "Effective Learning." *TCF* (blog). April 26, 2018. tricofoundation.ca/effective-learning/, para 6

32   Trico Charitable Foundation. "Effective Learning." para 7

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