

TOOLS FOR INNOVATION & ENTREPRENEURIAL SUCCESS (TIES) IN THE COMMUNITY COLLEGE

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Abstract

The Tools for Innovation & Entrepreneurial Success (TIES) in the Community College initiative is a multi-faceted innovative program that provides entrepreneurs with a mentored pathway to success. TIES creates vital mentorship linkages along with ideation and hands-on critical skill development to assist students in becoming lifelong entrepreneurs. This program is specifically designed to provide community college students within the City University of New York (CUNY) system access to a unique training opportunity. TIES is supported by an extensive network of professional mentors and experienced entrepreneurs. It uses a comprehensive scope of programmatic modules to create the businesses of today. The program operates independent of traditional curricula and co-curricular programs. This program provides the only opportunity for a population of students who face severe obstacles in acquiring financial resources and professional mentorship opportunities to pursue entrepreneurship training.

Introduction

The landscape of entrepreneurial training and support programs is vast. Non-profits and universities provide avenues for entrepreneurs to become successful. The majority of entrepreneurship and incubator programs currently accepting applications require business development beyond the conception stage. Recognizing this, the National Science Foundation has recently developed and implemented a unique and dynamic approach to entrepreneurship through the Innovation Corps (I-Corps) program. However, this program primarily targets graduate students. At universities, most entrepreneurship competitions cater to undergraduate and graduate students enrolled at four-year educational institutions. In contrast, students who attend community colleges and who enroll in two-year degree programs face greater challenges in developing and sustaining their own businesses than students at four-year schools.

Many community college students are unable to participate in traditional entrepreneurship programs as a result of funding and resource allocation. Current financial aid guidelines severely limit the amount of elective credit and programmatic resources for community college students. Community colleges frequently represent the only avenue to training and mentorship for low income and underrepresented populations. This is unfortunate because this population embodies one of the greatest examples of the entrepreneurial spirit in the United



States; most community college students are first-generation, immigrant strivers.

In 2014, the median age of students enrolled at community colleges was 28, according to the American Association of Community Colleges (AACC 2015). Employment opportunities that require the attainment of an associate's degree are projected to grow at the second fastest level behind master's degrees over the 2012-2022 time horizons (Lockard and Wolf 2012). According to the US Bureau of Labor Statistics (BLS), more than half of the occupations and industries projected to grow over the next seven years require some form of post-secondary education. Jobs that require the attainment of post-secondary education provide higher wages for employees. However, these goals will not be met if current statistics for the US post-secondary education system provide any indication of current trends.

Approximately forty-six percent of students enrolled in institutions of higher education are enrolled at community colleges (AACC 2015). Approximately sixty eight percent of these students receive some type of financial aid. These statistics reveal a student population that must overcome extreme obstacles to complete their education. The TIES program attempts to transform entrepreneurship training for these students. Over the last three years, the TIES program has grown dramatically. As the program entered its fourth year, it embraced the programmatic successes of the I-Corps model and heavily leveraged the NYC Regional Innovation I-Corps Node (NYCRIN), which is led by the City University of New York (CUNY).

CUNY is currently the world's largest urban public university. It is comprised of 24 institutions, including eleven senior colleges, seven community colleges, the Andrew S. Grove School of Engineering, the Graduate Center, and the CUNY School of Medicine. CUNY has over 540,000 matriculated and continuing education students. In the fall of

2014, CUNY enrolled over 5,500 students in undergraduate degree programs at seven community colleges throughout the City of New York (CUNY 2015). This represents a 9.5% increase from the prior year (CUNY 2015). More than half of the students enrolled in the community colleges self-identify as members of underrepresented populations. The ethnic breakdown for students entering the seven CUNY community colleges in the fall of 2014 was as follows: Asia/Pacific Islander, 19.2%; African-American, 25%, and Hispanic 29% (CUNY 2015). Most notably, more than 25% of our first-time freshmen students are between the age of twenty and twenty-two and 35% are below the age of twenty (CUNY 2015). Thus, the TIES program caters to a diverse age population.

Iterations and Methods

Spring 2012

The TIES program began four years ago as a pilot at Queensborough Community College of CUNY. The initial goal was to provide fundamental training and support for entrepreneurs to participate in pitch and competition events. The program was divided into three modules. The first module focused on ideation and business development. The second focused on startup funding and mentorship. The final module addressed fundamental business concepts; participants received one to one mentorship support sessions. For example, participants received training and mentoring on corporation formation and intellectual property protections. During this pilot year, the program enrolled four participants.

Spring 2013

There were eighteen participants in the next cohort in 2013. One of the successful student teams subsequently received startup funding. As is many times the case, the team encountered a number of individual challenges and chose to dissolve their company. The team cited the training and support they received as a key aspect of their decision to dissolve the

corporation. These students have continued to participate in the program and serve as mentors for our subsequent cohorts. The outcomes of the pilot led to a second iteration of the program in the following academic year.

Spring 2014

A pedagogical shift occurred for the third cohort. We placed a greater focus on communication and team building. The third cohort enrolled thirty-two students, with five students earning invitations to the finals of the New York State Business Plan Competition program in 2014. The overwhelming success of these first several years of the program led to a university-wide expansion of the concept beyond the Queensborough campus and a paradigm shift in the purpose of the program.

Corporate Mentors

A second key change in the 2014 program was the implementation of a corporate partnership. Members of Capital One Bank provided professional mentors for the student teams. Students were given the opportunity to participate in mock pitch sessions with these mentors. These sessions provided invaluable feedback on presentation skills, startup funding, and key entrepreneurial challenges faced by startups. In particular, the mentors were able to share firsthand professional and personal experiences to assist the students in shifting their perspectives and presentations. The inclusion of this corporate partner also allowed us to expand the TIES community college program.

Fall 2014 - Spring 2015: University Pilot Expansion

During the 2014-2015 academic year, the program expanded as an enhanced pilot to include four community colleges in the CUNY system. This expansion was the direct result of the allocation of financial resources by our corporate partner. The program included student participants from Borough of Manhattan Community College (BMCC), Hostos Community College

(Bronx), Kingsborough Community College (Brooklyn), and Queensborough Community College (Queens). A total of sixty-six students from these four schools participated in the program, which concluded in May of 2015.

During this expansion year, the program was divided into two phases. A revised syllabus was designed to provide access to professional mentorship on early stages of ideation, team building, conflict resolution, and communications training. This transition to mentor support at the outset of the training provided the fledgling entrepreneurs with the ability to redirect their efforts and focus on their business purpose and customer discovery. In addition, the student entrepreneurs were assigned a faculty mentor with a particular business expertise. By providing access to technical and professional mentors at the ground level, the student participants had a higher program retention rate and satisfied a higher number of milestones than prior cohorts (Table 1).

Phase One - Fall 2014: University-Wide Pilot Program

Phase one consisted of two key components. Entrepreneurs first participated in ideation sessions with industry mentors. These sessions provided one-to-one feedback and support for students to explore their business concepts. More importantly, it provided opportunities for entrepreneurs to conduct problem-solving focus groups and encouraged participants to communicate, share, and build team approaches to their common issues. Phase One focused on giving students from throughout the CUNY campuses the ability to come together, pitch their ideas, and receive feedback about their concepts. During the fall semester, students participated in individual campus events and completed a written business plan. Phase one concluded with students being invited to attend a pitch event for a panel of professional entrepreneurs. The goal during this phase was

to encourage students to focus on market trends and their core product or service.

Phase Two - Spring 2015: University-Wide Pilot Program

The second phase of the CUNY-wide program began at the start of the 2015 spring semester. A group of semifinalists from the fall cohort were invited to a pitch event where a panel of judges determined program finalists. This second phase of the program focused on assisting entrepreneurs in developing critical operational skills. Entrepreneurs simulated key operational roles within a company to develop skill sets in corresponding business functions, allowing them to understand and approach key operational challenges. Individuals enrolled in the program participated in networking, labor relations, corporation formation, and tax liability workshops. These were conducted through a flipped classroom approach, which allowed for weekly online chat sessions. The weekly “check-in” sessions became a key milestone for the participants. It also provided a forum for discussions on technical issues.

The online venue required participants to post their financial projections, human resources case study analysis, and corporate formation proposals. The flipped classroom approach was extremely successful. First, it provided a degree of accountability because student work was reviewed and this facilitated weekly discussions. Participants reported a desire to impress their mentors in the online community. More importantly, it created an ecosystem of entrepreneurs that was able to provide mutual support (NY1 2015).

This second phase of the program also focused on implementation of operational skills and an initial launch of the business. At this stage, participants received a stipend to assist with a prototype and market test of the business concept. The mentors became the key component for the entrepreneurs. For example, one of the student teams developed a solar powered thermodynamic device. The

team had an opportunity to pitch their idea to the head of the thermodynamics unit at a major corporation. This opportunity for the students to work with a seasoned professional was an invaluable experience for each of them. The mentor provided essential foundational support but, more importantly, kept the team focused on the critical operational aspects of their business. This interaction with a world-renowned specialist in the field of thermodynamics was a priceless opportunity for the team. As a result of his mentorship, the team redeveloped their pitch approach.

Pilot Program Outcomes

Successful programmatic outcomes were demonstrated at the conclusion of each program (summarized in Table 1). A total of five student teams received over fifteen thousand dollars in startup funding for their business proposals from our corporate sponsor. The presentations demonstrated the ability of the students to implement key skill set outcomes acquired during the program. For example, one team learned through the customer discovery model that customers were disappointed with turnaround time from placement of the order to product arrival. Their market research led to the purchase of shipping equipment. The shipping time decreased by five business days because of the purchase of a postal machine and packaging product. The company saw a twenty-two percent increase in revenue during the second phase of the program. The visibility of the program has also grown over the last three years. Each evolution brought more student engagement and business development, as can be seen by the increasing number of participants (Table 1).

Thirteen teams were selected as finalists to participate in the NYS Business Plan Competition in 2014 and 2015 (Table 1). One of the TIES teams invited to the finals of the New York State Business Plan Competition program received the 2015 “Esprit de Corps” award. This team was the

only community college group to receive such recognition statewide. The increasing demand for the program led, each year, to an assessment of the outcomes and needs of the students who enroll in the program.

Fall 2015 – Spring 2016: National Science Foundation I-Corps Program Model

The most recent program iteration has been redesigned to incorporate the National Science Foundation I-Corps model. The I-Corps process focuses on use of the Business Model Canvas, understanding that value propositions must match customer segments, and the importance of customer discovery interviews (Osterwalder 2013; Blank 2016). Specifically, I-Corps emphasizes an experiential learning process combined with an inverted classroom approach that aligns the value propositions with each of their customer segments. The process enables students to scale their commercialization model into a sustainable and repeatable business. It guides them through their partnerships and distribution channels to ensure that they identify their most efficient supply chain. Additional assistance on resources, cost structures, and revenue streams are also provided (Pellicane and Blaho 2014, 2015). The 2015-2016 program expanded to include all seven community colleges and three associate degree-granting institutions at CUNY in a modified I-Corps experiential learning program. A new programmatic outcome has been developed that seeks to increase degree completion rates and close gaps in attainment by underrepresented students. The program focus has shifted to include a system of credentials that a student can use to pursue future employment and educational opportunities.

Ideation and Hypothesis Testing

The current iteration of the program (2015-2016) shifted its focus to problem identification and solution development. The program begins with a focus on challenge

identification and ideation. Students are invited to attend kickoff events where students and mentors participate in networking exercises. A series of events are held at various CUNY campuses throughout the early part of the fall term. The events begin with an icebreaker game of networking bingo that is used to encourage students to develop their networking skills. This provides students an opportunity to develop their communication and interviewing skills.

The kickoff events begin with students selecting a group based upon various challenge topics. Students are then given the opportunity to participate in group discussions with a professional mentor. Each group discussion is allotted twenty minutes. The session begins with team-building exercises. This activity organically identifies the type of team member each participant may be. A typical exercise involves teams working together to build the highest possible stick tower (Figure 1). This allows the mentor to identify the various individual abilities and provides insight for the students on group dynamics. More importantly, it provides a unique opportunity for students to discuss issues relevant to their lives and communities. The challenge exercises facilitate discussions that require the students to formulate a hypothesis. These discussions are moderated by the mentor and recorded on large note pads. Participants are asked to identify a problem they would like to solve and their assumptions about the issue.

Students participate in a total of three ideation sessions. Each session presents a different challenge topic. Students are required to change topics to provide an opportunity for problem identification across varying subject matters. The group exercises give students the opportunity to think critically about the challenge and explore the depth of the topic. During these discussions, the mentors assist students in exploring their knowledge base about the problem. The groups then

participate in summary discussions, where they are asked to develop a potential solution to the challenge (Figure 2). The session is concluded by a birds-of-a-feather exercise that enables the students to select a challenge topic to research (Figure 2). Mentors place the session notes on walls throughout the room. Students are then given the chance to go topic shopping. After reviewing the topic notes, students are asked to form teams around the topics as a part of the birds-of-a-feather exercise. This exercise serves a dual purpose. It encourages students to form teams among their peers and creates a deeper awareness of problem identification.

During the current TIES program, students were also given the opportunity to participate in professional mentorship events held at the café of our corporate sponsor. The sessions were focused on debriefing the findings of the customer discovery interviews and the application of this information to their Value Proposition Canvas. These sessions were invaluable because they presented a unique opportunity for students to engage in critical thinking exercises beyond their traditional coursework. The 2015-2016 program also provided unique opportunities for students to engage in project-based work with students from the other CUNY campuses.

These first two components of the 2015-2016 TIES program involved a large amount of in-person training. This student contact time was essential, as it allowed for team building and networking opportunities. Students enjoyed the ability to discuss their concepts and solutions in person with their peers. These events also provided the opportunity to follow up with the mentors who facilitated the initial problem identification sessions. The next phase of the process was conducted through online WebEx sessions and a virtual course shell through the digital platform, Blackboard. Students were provided a Value Proposition Canvas (Osterwalder 2013). This assignment required the students to

“get of the building” and conduct customer discovery interviews (Blank 2016).

The focus of the final portion of the 2015-2016 program was to teach students practical and comprehensive steps to achieve solutions to challenges. Providing students the opportunity to conduct research outside their classrooms is essential for building research, communication, and writing skills. Their external research required them to test the validity of the hypotheses that they had developed. These findings were presented at a live semifinal event in front of a panel of judges. The presentations focused on their proposed solution and market research. Students were required to support and explain the potential solution for the challenge. A key aspect of the semifinal event was the invitation of a keynote speaker. The 2015-2016 TIES semifinal program began with a Fireside Chat with Steve Blank (2016) that was moderated by Harry Smith from NBC news, Kelvin Henry from QCC (a participant in the 2015-2016 cohort), and the 2013-2014 winner, Judell Alexander from KCC (Figure 3). The chat gave student participants the opportunity to interview a keynote speaker about life, entrepreneurship, and strategies to pursue their dreams.

A group of eight student finalists were selected to begin the last phase of the 2015-2016 TIES program, which focuses on hypothesis testing and assessment. The last phase began in January of 2016. The eight finalists attended a two-day boot camp program, which provided training for students on the key aspects of the Business Model Canvas. The final cohort of students must now test their hypotheses, which requires them to engage in reflective thinking. It also educates the students about entrepreneurship and project evolution. More importantly, the entire TIES program provides a tangible research project for students to employ in job interviews and course work.

The student finalists will be assigned a personal corporate partner mentor who will guide them through the remaining customer discovery process. Students will prepare and submit a grant proposal to the planning team. Ultimately, a team could receive up to five hundred dollars as a seed grant to validate one aspect of their hypothesis. A key aspect of this step in the TIES program is that it tests the ability of the student teams to demonstrate the viability of their business. Finally, in May of 2016, students will compete for over twenty five thousand dollars in startup funding for their businesses.

Conclusions

Based on our experience in establishing the TIES community college innovation challenge, we conclude the following:

1. It is most important to have strong corporate partnerships to facilitate mentorship and support for student participants. This portion of the program has been instrumental in assisting students to transition from ideation to implementation.
2. A university-wide program requires the support of on campus faculty and administrators to ensure local support and encouragement for students. The overwhelming success of many students would not have been possible without the hard work of their faculty mentors.
3. The utilization of the existing I-corps curricula and its outcomes has been invaluable in the development of the modified program.
4. It is important to fully embrace the varied pedagogical approaches to teaching and find ways to implement proven practices across multiple segments. The adaptation of the NSF I-Corps curriculum has been extremely successful and is now representative

of a model that can be shared with other schools throughout the US.

5. The TIES program has resulted in increased retention and degree completion among student participants over the last several years. This suggests the need to conduct further research on the impact of these programs in assisting students in completing their degrees.

Discussion

According to the AACC, there are approximately 1,123 community colleges in the United States and its territories (2015). With almost half of all undergraduates enrolled in community colleges in the Fall of 2013 (AACC 2015), the importance of nontraditional entrepreneurship training is apparent. The success of innovative and diverse programs has become increasingly apparent. The need to provide community college students a series of portable, stackable credentials is timely. Universities must look at methods and programs that will enhance entrepreneurship and skill set development opportunities for students. It is incumbent upon both two- and four-year schools to find innovative mechanisms to bring TIES into every aspect of a student's education.

Success can be measured in many different ways. A scientist who identifies the cause of an illness is a success. A writer who finishes a novel is a success. The individual and their accomplishments best define success. The students and teams who have had the opportunities to participate in this program are all a success. The community college innovation program is a serial entrepreneur. It has continued its process of customer discovery and conducted key pivots to meet the needs of its customer segments. Any program that provides training and support for innovation must identify the needs and desires of its customers. More importantly, it must provide opportunities for others to learn and share those opportunities with

others. For example, one student in the Fall 2015 cohort participated in the TIES program as a direct result of his request for a course from one of the program founders. This student attributed his desire to overcome his disability and pursue his dreams of becoming an entrepreneur based on the opportunities provided by the program.

The TIES program has continued to evolve because it is supported by a network of faculty and program directors who are seasoned business professionals and entrepreneurs in the fields of human resources, information technology, science, engineering, and law. Our corporate partner has provided countless hours of professional mentorship support that cannot be measured. This is evident in the relationships that have evolved between our students and their mentors over the last several years. Their passion for helping our students succeed is noteworthy. Furthermore, the program has benefited from the mentorship of nationally recognized and award-winning entrepreneurs whose passion to help this population is unwavering.

CUNY has a proven track record of utilizing its internal resources to attract mentors and provide ongoing support for entrepreneurs through the vast network of incubators and entrepreneurship programs. The program creates linkages for program participants that extend far beyond their two-year degree. Most importantly, the TIES program demonstrates the importance of linkages between universities and corporate partners.

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TABLE 1
SUMMARY OF TIES OUTCOMES 2012-2015

Year	Campus	Mentors	Participants
<u>Semifinalists</u>	<u>Finalists</u>		
2012	QCC		0
4	4	4	
2013	QCC		1
18	8	8	
Spring 2014	QCC		18
32	4	2	
Spring 2014	QCC, HCC		18
66	12	6	
Fall 2015	KCC, BMCC		22
86	QCC, HCC	8	
	KCC, BMCC, BCC		
<u>Year</u>	<u>NYS BPC Participants</u>		<u>NYS BPC</u>
<u>Finalists</u>			
2012	0		0
2013	12		0
2014	18		5
2015	22		8

Details of each cohort are described in the text. NYC BPC refers to New York State Business Plan Competition. QCC - Queensborough Community College, HCC - Hostos Community College, KCC - Kingsborough Community College, BMCC - Borough of Manhattan Community College, BCC - Bronx Community College.

Team-building Exercise

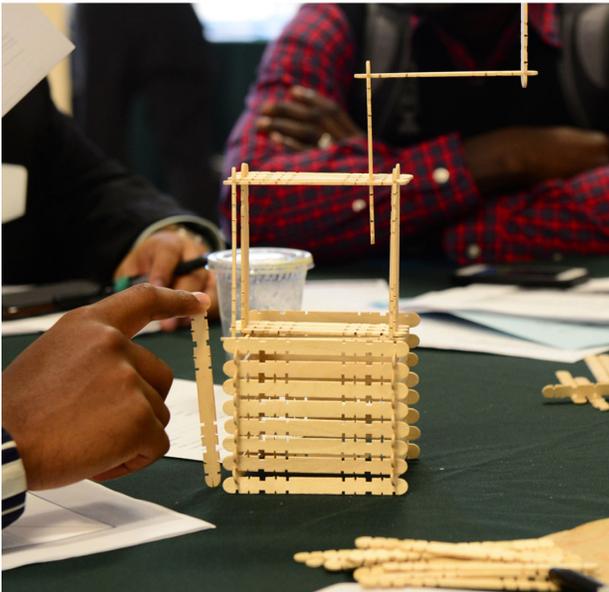


Figure 1. Image of a typical stick tower constructed by teams. Team members are challenged to work together to build the highest tower possible using the sticks.

Birds of a Feather Exercise

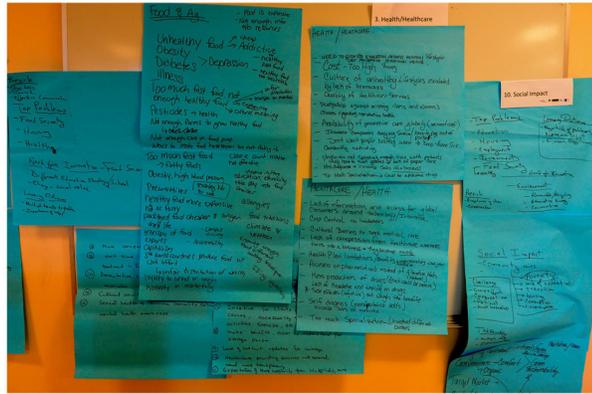


Figure 2. Image of birds-of-a-feather topics with student comments appended. Students were asked to identify a topic of interest and list problems to be resolved within that topic.

Fireside Chat



Figure 3. Image of students with Fireside Chat speaker, Steve Blank (second from left) and moderator Harry Smith (far right). Students Kelvin Henry (center) from QCC who is a participant in the 2014-2015 cohort, and the 2013-2014 winner, Judell Alexander from KCC (second from right) were invited onto the stage to join Mr. Blank and Smith in the discussion. Theresa Bedeau of the Capital One Community Development Team (far left) is an advocate of the TIES program.

TOOLS FOR INNOVATION & ENTREPRENEURIAL SUCCESS (TIES) IN THE COMMUNITY COLLEGE