

Assessment of a Cross-Disciplinary University Startup Accelerator

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Abstract

This paper focuses on the second year assessment results of Catalyze CU, a university startup accelerator at the University of Colorado Boulder. This annual intensive, 9-week program provides interdisciplinary, university-affiliated businesses with equity-free grants, mentorship, workspace, and prototyping capabilities. The program culminates in a demo day where companies give their business pitches to the local entrepreneurial community.

The program model emulates professional startup accelerators in the entrepreneurial community while keeping in mind best practices from other university accelerators. The model is mentorship-based, focused on transitioning teams from early product concepts to start-up ready companies. Activities that are core to the Catalyze CU program include a full cohort update, individual team accountability meetings, skill-building workshops, mentor office hours, and social events.

Assessment of Catalyze CU focused on goals related to the development of a university startup accelerator. Methodology for assessment included a pre-survey and post-survey given to program participants and one mid-point focus group, facilitated by a university assessment specialist. Results show success in reaching program goals and opportunities for improvement in reaching goals. The program received good feedback on its pitch practice support in particular. Suggested improvements for future Catalyze CU programing included better development of business and financial acumen, a stronger effort to involve the local entrepreneurial community, and an improved effort in teaching participating teams how to assess their own projects.

Introduction

In 2015, the White House opened its doors for the first ever White House Demo Day, inviting entrepreneurs from across the country to demonstrate their innovations and share their startup stories.¹ Formal entrepreneurship programs at U.S. institutions of higher education have quadrupled from 1975-2006.² Engineering educators from across the county have recognized entrepreneurial education as a means to help students strive toward the goals laid out in the NAE's Engineer of 2020 report by teaching students skills such as dynamism, agility, resilience, and flexibility.³

Engineering educators see entrepreneurial education as a way to reach student outcomes defined by the current ABET a-k criterion—working on multidisciplinary teams, understanding ethical responsibility, communication skills, and providing engineering students with a broad education that allows them to innovate and understand solutions in various contexts.⁴ One way of addressing the drive for entrepreneurial education is the creation of co-curricular, cross-disciplinary, university-sponsored startup accelerators. This paper details one such accelerator, exploring the background, describing program components and sharing assessment results.

Background

Entrepreneurial Education Overview at the National Level

From data gathered in 2011, there were 41 institutions in the United States “with historically active formal entrepreneurship programs for engineers.” These programs include coursework, minors, certificates, and/or other, co-curricular programming such as pitch or business plan competitions and workshops.⁵ Gilmartin et al (2014) highlight the factors that support entrepreneurial program formation: perceived needs, leadership with vision, catalytic funding, convening of critical “do-ers”, and intent to provide engineering students with business skills and knowledge. Many engineering students have a drive to learn more about entrepreneurship and to better understand how it can affect their career prospects and choices. While this does not mean every engineering student will become an entrepreneur, as many as 60 percent want to learn more about entrepreneurship.⁶ However, the rigid requirements that define an engineering curriculum at most universities can make it difficult for students to have the opportunity to focus on entrepreneurship.⁷ Co-curricular options, such as out-of-classroom accelerators, provide motivated students with this opportunity.

The Evolution of Entrepreneurial Education at the University of Colorado Boulder

The University of Colorado is situated in Boulder, a true hub of innovation and technology that includes a local community robust with entrepreneurs, startups, and venture capitalists. The Kauffman Foundation reports that Boulder has the highest density of tech startups (those related to science, technology, engineering, and math) of any other metro area in the country⁸. In 2015, Forbes ranked the University of Colorado Boulder among the top 20 entrepreneurial U.S. universities⁹. In the last 5-10 years, the interest in creating more connection between the university and the local entrepreneurial community has grown. The University of Colorado law school responded to this need by forming the Silicon Flatirons Center, a center dedicated to (among other things) regular entrepreneurial programming, supporting and enabling entrepreneurship in the technology community, and serving as the primary organizers of an annual campus-wide pitch competition. The directors of this program also created an interdisciplinary group on campus, consisting of faculty and staff in support of entrepreneurship that convenes quarterly to collaborate on entrepreneurial endeavors on campus.

Across campus, the momentum for entrepreneurial education grew. The business school created the Deming Center for Entrepreneurship. Multiple colleges and schools created department specific entrepreneurial offerings. The College of Engineering and Applied Science (CEAS) added entrepreneurship courses and a certificate, run by the Engineering Management Program, which quickly gained popularity among engineering students. To expand the interdisciplinary and co-curricular entrepreneurial programming run through CEAS, Catalyze CU was created to supplement, rather than duplicate, the programs that were offered elsewhere on campus.

After two successful years, Catalyze CU has been positioned as a summer experience open to students, faculty, and staff from across campus. For the first two years, financial support came predominately from the College of Engineering and Applied Science. The program compliments the business school, law school and College of Engineering and Applied Science academic year programming and leverages the law school’s spring pitch competition participants as a pool of potential Catalyze CU applicants.

Since the first Catalyze CU cohort went through the program in summer 2014, the momentum has continued within the campus entrepreneurial community with the implementation of a campus-wide entrepreneurship initiative, grant funding from local donors, and the creation of the Global Entrepreneur in Residence program, which brings entrepreneurs from across the globe to campus for a residence in which they support the various initiatives and students from all departments on campus¹⁰. All of the programs together, along with curricular options, create a pipeline of students to learn about entrepreneurship, get connected into the campus and local community, and participate actively in creating a new venture.

The Catalyze CU Program

The program is a nine-week summer experience designed as a startup accelerator for university affiliated companies. Mentorship and equity free grants are offered to promising entrepreneurs so they can turn their ideas into realities. The program model is based on professional startup accelerators in the entrepreneurial community while keeping in mind best practices from other university accelerators. The model is a mentorship-based model that provides multiple mentoring opportunities for each team.

Catalyze CU was carefully scheduled to allow students to take classes during the first summer session on campus and to leave multiple weeks before school starts again in the fall. The program format included weekly meetings of the full cohort as well as weekly individual team accountability meetings. In a given week, there were workshops, scheduled office hours with mentors, and social events. Finally, the teams participated in weekly pitch practice with an evolving population of community and academic individuals present to give fresh feedback. The program culminates in a demo day where companies gave their business pitches to the local entrepreneurial community. For the 2015 cohort, approximately half of the teams were building physical prototypes and had engineering students as members.

The individuals involved in running the program included various Catalyze CU staff who ran the weekly full-cohort and team-specific check-in meetings while outside individuals (university faculty and staff as well as community members) hosted workshops on specific relevant topics, hosted office hours to meet with teams individually, and helped critique pitches during pitch practice. Each of the outside individuals who served as subject matter experts and/or mentors donated their time.

The university staff consisted of a managing director, a student program director, a student intern, an advisor, a media consultant, an assessment specialist, and a faculty mentor. The managing director is a staff member in engineering who co-runs the support facility that houses the program. Her role is dedicated to Catalyze CU on a part-time basis. She works to provide connection to the other entrepreneurial initiatives on campus, aligns university and community partners, sets the program direction, and runs administrative tasks through the university such as payroll, providing the grant funding to the teams, and facilities issues. The program director position was held by a very capable undergraduate student with a background in entrepreneurial programs and was returning for his second year with the program. He ran the day-to-day programming and addressed immediate concerns of the cohort of teams. The intern was an undergraduate student interested in entrepreneurship. His main duties included logistics, media,

and marketing. He planned the social events, wrote the blog, and collaborated with the media consultant to promote the final demo day event to the public. The program’s advisor is an assistant dean from the engineering college. He helped co-found the program in 2014 and worked to secure base funding from the College of Engineering and Applied Science and negotiated limited funding from the business school as well as support from local corporate sponsors. He generally promoted the program among his university connections and is active in the entrepreneurship initiative on campus. The media consultant was a student contractor who has his own graphic design and media business. He and his team worked with each of the companies on logo design, website design, and marketed and produced the demo day event. The assessment specialist is a research faculty member on campus who specializes in assessment of educational programs. Finally, the faculty mentor comes from the Engineering Management Program and has substantial industry and startup experience. He provided accountability to teams and connected them with resources. The managing director (partial), program director, and intern were on the payroll. The assessment specialist and media consultant were brought in as contractors. The managing director is the only position that is supported when the program is not in session.

The companies were selected to participate through an online application platform called F6S. This platform is commonly used by professional accelerators and allows startups to create a profile of the prospective company. Questions on the application included the team’s connection to the university, the team members, how the founders know each other, and the company’s traction to date, and the team members’ summer availability. The application took 30-45 minutes to complete. Of the 25 applications received, 16 were interviewed and 8 were selected. Due to limited funding at the start of the program, only six teams were offered the \$4000 equity-free grant. Before the end of the program, with additional sponsorship funding, all teams had received some portion of the grant money. Half of the grant was disbursed at the beginning of the program while the remainder was disbursed at the halfway point if the team was meeting expectations. In 2015, one team did not earn the second half of their grant money.

The demographics of the 2015 Catalyze CU cohort included undergraduate students, graduate students, young alumni and university staff. The stipulation to be a part of the program is that one team member still has a valid university login name. The majors/professional interests of the 25 team members (2 individuals never participated in the program) of the eight participating companies had some variation: 16 from engineering, five from business, and four from arts and sciences. The majority of the students were undergraduates (12) followed by alumni out of school for a year or more (5), recent alumni who had just graduated (3), graduate students (3), one post-doctoral researcher, and one university staff member.

The range of selected companies also was quite varied as shown in Table 1.

Table 1: Catalyze CU companies

Company	Description
1. Big Blue	Reduces costs and emissions in lightweight metal production
2. Lawbooth	Makes legal consultation easy with an online platform
3. GoodEats Meats	Brings local, high-quality, smoked barbecue to our Boulder and beyond
4. Innate	Introduces information display to your bathroom mirror

5. Kitables	Puts all of the components for your next DIY project in one, organized container shipped to your door
6. Pallas, Inc.	Mitigates hair loss in chemotherapy patients with a novel cold cap technology
7. Surya Conversions	Produces hybrid conversion kits for auto-rickshaws in developing countries
8. Vektor Tech	Automates the tattoo and hair removal process with robotics technologies

Catalyze CU culminates in a business pitch showcase known as Demo Day. This event, held in the evening, consists of each student company presenting a 5-minute business pitch. It is considered to be the unveiling of the post-accelerator startup into the community. Six of the eight teams presented at Demo Day, with one team not present because of acceptance into another accelerator occurring simultaneously, and the second team not present because of their failure to meet required milestones. The event is generally attended by friends and family, the local entrepreneurial community, and Catalyze CU supporters as well as individuals looking for investment opportunities. Demo Day was also live-streamed and video recorded. After the pitches, the teams each had a table to greet guests in the lobby of the venue and show off their product. The approximately 150 attendees bought tickets to the event and were given fake Catalyze CU dollars to “invest” in the company of their choice. While not a formal pitch competition, the event allows for a “people’s choice award” of sorts and all of the proceeds were awarded back to the teams in alignment with the proportion of Catalyze CU dollars they received. Teams reported making enduring investor and mentor connections at this event.

Supporting Facility

The Catalyze CU program is hosted at the University of Colorado Boulder Idea Forge. In 2015, the Idea Forge was created as a flexible, cross-disciplinary design facility striving to provide an authentic simulation of real-world design experiences. The Idea Forge was constructed as adaptive reuse of empty university space that was once a law library. The planners capitalized on the large open space, high ceilings, and natural lighting to facilitate an inspiring, yet fully-functioning, industrial design space. At 22,000 square feet, the Idea Forge incorporates a large Commons area, a Senior Design Studio, a single day use design studio, dedicated machine, welding and electronics shops, as well as prototyping and prototyping areas. There is also a makerspace for personal design projects and a project-based classroom for instruction, as well as an abundance of storage space. The Idea Forge not only provides the physical spaces, but also the staff that delivers a collective cognition and expertise similar to what would be found at a small corporation. The Idea Forge vision is to provide an intermixed collaborative space in which engineering students and their partners can work together to design, build and refine their conceptions. A priority associated with this vision is to be a resource for campus entrepreneurship.

The Idea Forge Senior Design Studio was designed as a co-working space to support industry-sponsored Senior Design teams during the academic year. The open layout is configured for

team collaboration, project assembly, storage and computing needs. The Senior Design Studio was donated to Catalyze CU for use during the summer months in 2015. The project-based classroom and Commons were utilized for weekly Catalyze CU programming. Student companies that were developing physical prototypes also had access to the machine shop, welding shop, electronics and rapid prototyping areas.

Program Assessment

Assessment of Catalyze CU focused on five goals developed collectively between the assessment specialist and program administration:

1. Recruit a pool of high quality early stage student startup companies for a 9-week summer accelerator program.
2. Provide individualized team support for company teams to build their business model.
3. Connect companies with an established network of mentors to provide team support.
4. Organize a series of events to build skills across teams and connect stakeholders.
5. Track team development through an assessment plan with metrics for success.

Data were collected from 20 Catalyze participants. Assessment methods included a pre and post-survey, an alumni survey and a mid-program focus group. The pre-survey was distributed to enrolled students at the beginning of the program to determine initial skill levels, answer questions about recruiting, and determine team expectations. A mid-program focus group was held to gain more in-depth feedback where students were grouped into assessment teams and provided feedback on program strengths and opportunities for improvement. Then, students rated their level of agreement with each suggestion on a 1-5 scale. A post-survey was administered to determine skills gains and team accomplishments and to reflect on the participants' experience in the program. An alumni survey was administered six months after the conclusion of the summer program to check in on Catalyze teams.

Survey questions were rated on a one-to-five Likert type scale with a 70% cutoff (a rating of 3.5/5) to help evaluate effective program components. Surveys also included open-ended questions to gather verbal responses to support numerical ratings. Numerical results were evaluated against a 70% cutoff (3.50/5.00) with activities and ratings above 3.50 considered as evidence of program success for the evaluation of results. Results were presented by the assessment specialist and evaluated at a programmatic debrief after the program, which was attended by program stakeholders and administration.

Results and Discussion

Results from the three assessment tools are provided, discussed and organized by goal.

Goal 1. *Recruit a pool of high quality early stage student startup companies for a 9-week summer accelerator program.* Student startup companies were contacted for participation through multiple avenues on campus. Table 1 displays the recruiting results from the pre-survey, indicating that the primary means of enrollment were through affiliation with Spark Boulder, a local, student driven co-working and entrepreneurship focused space just off campus, and from co-workers or mentors.

Table 2: Learning about Catalyze CU opportunities

Source	Percent
Through affiliation with Spark Boulder	25%
From co-workers, e.g. CEO, mentor	25%
Electrical engineering capstone class email	13%
Campus pitch competition	13%
Entrepreneurship Center at business school	13%

In order to reach more potential companies, a suggestion for improvement is reaching out to other capstone programs. Inviting other capstone courses to apply to the program would allow Catalyze CU to draw from a greater pool and have access to more students who are already involved in idea and technology development. The post assessment revealed that 85% of participants said they would recommend Catalyze CU to other student teams. One participant stated, “I love you guys and know you have the potential to change lives with this program,” and another commented, “I think we for sure got value from being in the program. Thanks for providing this opportunity.”

Goal 2. Provide individualized team support for company teams to build their business model.

The pre-survey sought to understand what participants hoped to gain from the program for their company teams. Table 2 displays the respondents’ expectations for the summer, indicating the acquisition of funding and the development of a prototype as priorities.

Table 3: Expectations for Catalyze CU Program

Expected Outcomes	Percent
Acquire more funding	55%
Develop working prototype	50%
Work on marketing	40%
Develop our business model	35%
Build mentoring relationships	25%

Table 3 displays participant ratings of types of program support. The post-survey results indicated satisfaction with the individualized support provided by Catalyze CU. The strengths of this goal were media support by Eyesight Creative with a rating of 4.67/5.00 and financial support with a rating of 4.47. The ratings are seen below, and they are out of a five-point scale.

Table 4: Ratings of Programmatic Support

Sources of Support	Rating (5 point scale)
Eyesight Creative media support	4.67
Financial support	4.47
Individualized support	3.61

One participant commented, “It was great to have free office space provided, free food on Mondays, and grants to help us develop our business.” One suggestion for support improvement is delegating various jobs to different staff members, as indicated by a participant noting, “from where I was sitting it seemed like a lot of responsibility was put on (the program director) to fill

the roles of coach, cheerleader, hard-‘case’, and mentor... the program could be stronger if there were some other people to step into those other roles.”

Goal 3. Connect companies with an established network of mentors to provide team support.

Feedback from the mid-program focus group is depicted in Appendix A and B. Results demonstrated that some of the most valued events for participants were the pitch workshops, which were viewed as repeat mentoring opportunities for teams to receive feedback on their pitch, resulting in a rating of 4.47/5.00 on a five-point scale. Another well-received mentoring opportunity was the mentor dinner (rating of 3.93/5.00) which one participant said “was by far the best networking event and we made numerous important connections that night.”

The post-program mean for mentor connection was 3.71/5.00, which falls above the desired assessment rating of 3.50/5.00 (70%), indicating that it was a success. However, there is still room for improvement; one participant echoes this sentiment in commenting, “[it] would have been more helpful to have more specific mentors from industry or that have engineering backgrounds.”

Goal 4. Organize a series of events to build skills across teams and connect stakeholders.

Table 4 depicts a rating of events by Catalyze participants. The most highly rated events were the weekly pitch practices and the graphic design workshop. One participant said, “mentor dinner night and pitch practices by a landslide. We made some great connections that night that then lead to more connections. Our pitch went from ‘meh’ to awesome; pitch practices get an A although it would be great to get some more people in there for the full time.” Overall the events were a success with one participant noting, “select Catalyze sessions were very useful, for example the presentation on financials. We enjoyed the off-campus events and networking, and naturally pitch practice was always useful.” The lowest rated events were the lean canvas and user interviews and one pitch coaching workshop. This shows there is still room for improvement with one participant suggesting, “potentially move business financials earlier on in the program...figuring out way to make revenue will help shape those early decisions.”

Table 5: Rating of Events

Event	Rating
Weekly pitch practices	4.38
Graphic Design Workshop	4.21
Elevator Pitch Competition	3.91
Mentor Dinner	3.87
Top Legal Matters for Startups	3.82
Valuation Workshop	3.77
30 Minute Accountability Meetings	3.73
Office Hours with Mentors	3.67
30 Minute Meetings	3.67
Mentor Speed Dating	3.65
Team, Agreements, and Tough Conversations	3.56
Effectual Entrepreneurship	3.50

User Testing	3.36
Startup Summer Mixer	3.22
Financial Prep Workshop	3.18
Strategy and Marketing Workshop	3.17
Expenses and Revenue Projections	3.07
Mentor Fantasy Draft	3.00
Logo, Branding, and Website Workshop	2.86
Lean Canvas and User Interviews	2.62
Pitch Coaching Workshop	2.13

Turning to program skills assessment, a series of skills were targeted related to the development of a business model. These skills were rated on a five-point scale and the two skills with the highest percent gain were selecting key activities and identifying key partners. These skills had recent gains of 27% and 19%. The skills with the lowest percent gain were maintaining customer relationships and calculating cost structure. They only had gains of 5 and 6 percent. This shows there is still room for improvement with these two skills. Alumni survey results indicated gains across the range of skills with the strongest gains in the area of identifying key resources. These results provide some evidence of progress after the summer program has ended.

Table 6: Skills

Skills	Pre	%	Post	%	Pre-Post Gain	Alumni	Post-Alumni Gain
Selecting key activities	3.05	61%	3.88	78%	27%	4.00	3%
Identifying key partners	3.25	65%	3.88	78%	19%	3.90	1%
Identifying customer segments	3.35	67%	3.93	79%	17%	4.10	4%
Understanding value propositions	3.65	73%	4.19	84%	15%	4.20	<1%
Identifying key resources	3.35	67%	3.75	75%	12%	4.30	15%
Generating revenue streams	2.95	59%	3.25	65%	10%	3.30	5%
Maintaining customer relationships	2.90	58%	3.06	61%	6%	3.20	5%
Calculating cost structure	3.05	61%	3.19	64%	5%	3.40	7%

Goal 5. *Track team development through an assessment plan with metrics for success.* This goal was strengthened by adding a pre-assessment and a mid-program focus group and gathering team data as it became available, such as the news that two companies had \$250k investment after Demo Day exposure. However, assessment could be strengthened by teaching teams to assess their own project and report out results. Examples could include working with teams to reach a definition of success and providing incentives for teams to assess progress against their definition of successes. In the post assessment the rating of learning to track the development of your team with success metrics was 3.24/5.00 below the 70% cutoff and indicating some need for improvement.

Across Catalyze CU program goals a number of successes can be highlighted. The Catalyze CU program was able to capitalize on community contacts and references to recruit eight startup company teams into its accelerator program. Team members were connected with an array of workshops and mentoring opportunities and assessment feedback indicated that they really appreciated mentoring around pitch practices and the opportunities for connection at the mentor dinner. Students indicated a number of skills gains related to the development of a business model with skills related to selecting key activities and identifying key partners for their projects. Alumni results revealed stronger skills gains after the program in the area of identifying key resources for their projects. Teams provided additional feedback on the alumni survey indicating continued mentor support after the program and additional fundraising success (two teams received \$250k investment).

Integration of results with on-going national efforts at entrepreneurial education

The addition of Catalyze CU to the offerings at the university aligns with the movement across the country to provide entrepreneurial education at the college level⁵. At the University of Colorado Boulder, Catalyze CU fits nicely into the summer months and benefits greatly from the entrepreneurial programming that goes on during the school year. The university entrepreneurial community has created a pipeline of sorts, encouraging student entrepreneurs to take advantage of school year support leading into a culminating experience in the accelerator, launching their business into the community. One potential additional pipeline, based on the results of this study, is recruiting engineering capstone design teams.

Catalyze CU draws students who are looking for a real-world experience beyond what they may find in an entrepreneurial class, which is bound by the semester timeframe and subject to formal assessment and grading practices. The extracurricular nature of Catalyze CU is seen as a positive aspect that allows for more flexibility and creativity in scheduling and content. Also, since many engineering students are limited by a rigid course schedule during the school year⁷, the summer offering allows them to focus on learning entrepreneurial skills and moving their startup forward. Extracurricular programs have been shown to improve self-efficacy in engineering students,¹¹ increasing their beliefs in their own abilities. Similar results are seen in our assessment results, where students' confidence in their skills grows within and beyond the program.

While predominately sponsored through the engineering college, Catalyze CU is truly cross-disciplinary, bringing together students and representatives from engineering, business, and arts & science. The program creates an opportunity for students to work in a real-world setting, which includes allowing students to take some chances and to fail forward in a relatively safe environment. They learn entrepreneurial and business skills which will serve students well in whatever profession they choose to pursue. Catalyze CU gives engineering students a broader view of the potential of their technical skills, that various career goals are possible. For example, an engineering student reported in the results, "I also found learning the business/financial side of creating a business interesting and something I don't get much of as an engineer."

When compared to other well-known university accelerators such as those at the Massachusetts Institute of Technology (MIT) and Stanford, Catalyze CU is just getting started in terms of history and university support. For example, MIT's 3-month, summer Global Founders' Skills

Accelerator provides monthly living stipends for each MIT student on a selected team as well as the opportunity to earn \$20,000 in company funding provided that certain goals are met. They choose 12-16 teams each summer.¹² Stanford's StartX has ten full-time staff members and 18 part-time volunteers. Catalyze CU offers \$4000 in grants to each of the 6-8 selected teams and has zero full-time staff members¹³. At Stanford and MIT, entrepreneurship is part of the culture¹⁴, making such strong support possible. While interest in entrepreneurial education is growing at the University of Colorado Boulder, progress is still being made.

While our results are informative, they come with a number of limitations. Catalyze CU started in 2014. Assessment data was collected in 2015 for the first time. We currently have only one year of data from a very small set of participants (23) and a smaller set of alumni (11). The gains in skills shown in Table 6 could be attributed to bias, where those who responded were those who are still active with their reasonably successful startups and have a positive association with the program. Future iterations of the program will strengthen our dataset.

Catalyze CU Program Improvements

Based on assessment results and discussion, the following program changes are planned for the next offering of Catalyze CU. First, the recruitment of quality teams is a factor that can always be improved. Because of a change in staffing from the first year to the second year, there was minimal presence of the Catalyze CU brand in the campus community before the planning for the second year took place. Because of more consistent staffing from the second year to the third, the program will have a stronger name through the "off-season" with a consistent social media presence and participation at other entrepreneurial events on campus throughout the school year. The consistent staffing presence will allow for active recruiting during the spring semester. Further recruitment efforts include spreading the word through campus and college communications and in-person presentations in classes such as capstone design and classes that cover entrepreneurial topics.

To improve individualized team support and mentor connections, the program has hired a professional program director for the next summer instead of having a student employee in the role. This person will be active in the local, robust entrepreneurial community with the experience to guide the teams forward and to connect them to a strong network of mentors in the community. This person will also have the role of tracking team development and creating a plan to address the needs of each team on an individual basis.

Curricular improvement will be addressed based on the results of this study. Because of focus group and survey feedback, it is clear that some workshop offerings need to be adjusted and revamped. Some simply require a change in facilitator, while other topics need to be revisited for applicability altogether. One plan is to integrate Lean Startup methodology throughout the program, which encourages shorter product development cycles, iterative product releases, and making decisions based on user-feedback throughout the program. The program received a university entrepreneurship grant to add this to the curriculum for the next year and aligns with the National Science Foundation i-Corps program that encourages the commercialization of technologies established in university research labs. This training will allow the program to provide teams with additional tools for goal setting and self-assessment.

Conclusions

Catalyze CU has completed an exciting and challenging two sessions and joins a growing interdisciplinary campus entrepreneurial community locally and nationally. By continuing to hone recruitment practices, improving connections to the local entrepreneurial community, strengthening the assessment plan and identifying beneficial curricular adjustments, Catalyze CU is poised to continue as a strong contribution to the university entrepreneurial ecosystem.

Assessment results revealed that the program recruited a diverse set of startups from multiple sources and provided financial and individualized team support that was well received by participants. Teams were connected with mentoring opportunities through a series of events. Team development was tracked throughout with targeted metrics. Finally, teams continue to improve after the program continuing to build skills, procure mentors and secure funding. Against these criteria the program is judged a success.

Assessment results revealed:

- Goal 1: *recruit a pool of high quality early stage startup companies for an 8-week summer accelerator program.* This goal was successfully met and after the program 85% of participants said they would recommend this program to friends. However one suggestion for improvement would be to promote the program as prestigious in the startup community.
- Goal 2: *provide individualized team support for company teams to build their business model.* During the post-assessment, the media consultant was listed as one of the best providers of individualized team support, which provides evidence that this goal was met.
- Goal 3: *connect companies with an established network of mentors to provide team support.* The part of this goal that was the most successful was the pitch workshops. One suggestion for improvement would be to integrate the Catalyze teams better into the startup community.
- Goal 4: *organize a series of events to build skills across teams and connect stakeholders.* Catalyze held many events to help connect participants and develop their skills. Mentor speed dating and pitch practices were both highly rated with suggestions to improve the pitch coaching and lean canvas workshops. Additional assessment should target these events individually. Student built business model skills during and after the program in selecting key activities and identifying key resources but could benefit from more support in calculating cost structure.
- Goal 5: *track team development through an assessment plan with metrics for success.* Two new assessments were added to the program with focus groups at midterm and an alumni survey to better track team development. Teaching teams how to assess their projects could strengthen this goal as well as adding more real time assessment.

In sum, Catalyze CU has added to the entrepreneurial ecosystem on campus. It serves as an example that universities who are only starting to truly invest in entrepreneurial education are able to put together strong programs that teach entrepreneurial skills, launch successful new ventures, and provide students a rigorous experience.

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Appendices

Appendix A: Strengths of the Program

Strengths of the Course	Mean
Free food on Mondays	4.87
Media consultant support	4.67
Rotating variety of people at pitch workshops	4.47
Pitch sessions	4.47
Financial support	4.47
Camaraderie between teams	4.20
Opportunity to network (with mentors)	3.93
User feedback model	3.93
Being held accountable at Monday meetings	3.87
Physical resources (Facility)	3.80
Workshops	2.60

Appendix B: Suggestion for Improvement

Suggestions for Improvement	Mean
Promote program as prestigious	5.00
Structure Monday meeting around 3 goals and check-ins	4.80
Focus workshops on business success	4.80
Focus model on building business in real time instead of educational concepts	4.73
Better integrate accelerator teams into startup community	4.67
Reach formal definition of success in Catalyze program on common document	4.53
Restructure pitch workshop for clarity	4.53
Improve access to Idea Forge resources to promote business startups	4.53
Add champion to management team to enforce/inspire	4.47
Have experts focus on individual team needs as case studies for larger group	4.40

Focus on cross-team collaboration	4.33
Mentoring office hours for specific teams	4.20
Provide parking passes	4.07
Provide written expectations for mentor relationship	4.00
Make teams wants to be in the co-working space everyday	4.00
Compress workshops into Monday 8-5	3.80
Focus all-hands meetings on specific, necessary collaborations	3.73
More input/tie-in during events on filling out business canvas	3.67
Add course credit	3.67
Restructure Mentor Fantasy Draft workshop away from lecturing on mentoring and utilize the mentor's expertise elsewhere	3.47