



# Breaking Boundaries: A Unique Inter-University Program Addressing the 21st Century Skills Gap

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According to the World Economic Forum 2020, some of the most critical skills needed to thrive in the future economy will be the ability to collaborate in multidisciplinary teams, build diverse networks, and be human-centered problem solvers. However, many university students have limited exposure to interdisciplinary problem solving, and tend to build connections within their bubbles (socioeconomic level, college, the field of study). In this study, we'll review Innovate NYC (iNYC), an extracurricular program addressing these skills gaps. In three cohorts between 2016-18, 50 students from 12 New York City colleges, collaborated in multidisciplinary teams to solve real-world problems using innovation methods like HCD (Human Centred Design) and lean business strategies. The challenges were provided by partners like NYCEDC (NYC Economic Development Corporation) and other locally focused non-profits. However, did the program achieve what it set out to do and how might we apply the learning? In this study we aim to: 1. assess the strength and diversity of social connections between former iNYC participants, 2. identify any effect the program may have had on their career pathways, and 3. assess their continued use of innovation methods. To do this, we will examine the structure and delivery of the program, as well as review qualitative exit surveys and longitudinal survey results.

## Context

In 2015, a workshop was held that brought together some of the biggest players in NYC higher education to discuss and seek to address some of the most pressing needs in the sector. Facilitated by the DO School, a Berlin based social enterprise, in coordination with the former Under Secretary of Education for the Obama Administration, Martha Kantor, the workshop's purpose was to not only identify shared challenges but to design a new program that might tackle them together.

Guided by a human centred design approach, Deans, Provosts, senior administrators and faculty from over ten New York universities, public and private, converged upon three key issues that all institutions were facing. These were, (1) the increasing cost of higher education leading to debilitating student debt for those who can least afford it, (2) the growing dropout rate among working class and immigrant families, and (3) the inability for institutions to adapt and design new programs quickly enough in order to adequately teach skills and mindsets for the new economy, leading to a 21st century skills gap. This skills gap issue was identified as most promising and suitable to explore further, and consensus was reached that it should be via a student facing extracurricular program that would provide real-world experience to students in interdisciplinary problem solving.



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In 2016, the DO School launched Innovate NYC (iNYC) with funding support from Newman's Own Foundation and in collaboration with the following NYC higher education institutions: the New School, Columbia University, New York University (NYU), Pratt Institute, Fordham University, Cooper Union, Borough of Manhattan Community College (BMCC), Guttman Community College, Bronx Community College, and Macaulay Honors College. The program ran for three years, with up to 20 students recruited and selected each year from the partner universities, who would form a student design innovation studio that would respond to a city-based challenge set by a local non-profit organisation. Selection of student fellows was intentionally tailored to ensure diversity amongst the cohort, explicitly concerning their college, background, and level of experience with innovation, human-centered design (HCD) or interdisciplinary studios. Programs were designed and facilitated by experienced innovation and HCD facilitators.

The authors of this case study came together as representative stakeholders from two participating universities and the DO School, to assess the program's efficacy. Rhea Alexander is an Assist. Prof of Strategic Design and Management in Parsons School of Design at The New School. She is also Founder and Director of the Parsons Entrepreneurs Lab and served on the board of advisors for the Innovate NYC from 2015-2018. Her research focuses on how to integrate human centered design practices into impact entrepreneurship and innovation education. Shane Snipes is business faculty and Deputy Chair, Business Management Department at BMCC teaching and researching in the areas of entrepreneurship education and mindfulness. He also served on the board of advisors for Innovate NYC from 2017-18. Matt Stewart is an experienced strategy designer and innovation consultant. He's designed and facilitated human-centred innovation programs across the world, guiding diverse teams through the design process to tackle complex challenges. He managed and facilitated the Innovate NYC program in 2018. In this case study, we explore and assess the development, approach, learning and outcomes from our program with the aim of applying the insights to future programs, our practices and contribute both in academia and in applied innovation practice.

## Narrative

Innovate NYC program operated annually in two parts, following a design innovation process. First, selected participants were invited to join for a mandatory two-day 'base camp' weekend in April. The purpose of this intensive workshop was to bring the team together and start to build trust and rapport. It involved a host of team-building exercises, with a specific focus on understanding different working and conflict styles, as well as identifying one's purpose and sharing that with new teammates. After a two month break, in the June summer holidays, a three-week studio took place where participants were guided through the various phases of a human centred design process, tackling a local problem.

To illustrate, in 2018, iNYC's local partner was non-profit organisation, Here to Here. They presented a challenge closely aligned to their organizational mission - to empower Bronx-based youth to reach 'family sustaining' careers. Students were asked to develop solutions that might help bridge the gap between education and employment in a borough that has a \$20k a year lower average wage than the rest of the city.

After an initial 'challenge handover' to the 2018 cohort, industry experts and community members were invited to share different sides of the problem, and the students were taught to map the ecosystems and stakeholders, condensing key learnings to prepare for fieldwork. Regularly breaking up into new groups, the students then conducted simple ethnographic research methods, including interviews with youth and observing different environments across the neighborhood. Interview findings were condensed into some critical insights in a synthesis phase which were shared to the partner for feedback along with some early stage solution ideas. Based on validated insights, an ideation phase commenced, and two concepts were developed. Guest mentors offered input in storytelling, branding, and engagement which helped the students refine their ideas into basic prototypes. The final results were shared with Here to Here at a pitching event and celebration.

The solution concepts for this project were:

1. A card set and game for engaging community members as mentors, based on the insight that while many youth would like a mentor, they lack the skills to be a good mentee
2. A fashion traineeship program for Bronx high school students, based on the insight that many youths care more about fashion than grades

The Innovate NYC schedule also included a social event where all participants from previous cohorts were invited to attend and mingle. Below, figure 1 demonstrates various aspects of the program with photos from the process.

Here to Here's feedback, from a 'client' partner perspective, demonstrate the value they took from the initiative. First, they gained a new perspective to help with strategy and improving their work - *the students highlighted genuine insights that H2H hadn't thought of, including: finding out via local interviews that few people in the neighbourhood had actually heard of H2H, and highlighting specific challenges and perspectives of the target group (Youth)*. Second, their staff had a chance to work with creative young people, to share directly about their work and be inspired by new energy and ideas.



Figure 1. Participants during the 2018 iNYC program. Credit: the authors.

## Post-Program Survey

In late 2018, it was decided that the program would no longer be supported and funded by the DO School and Newman's Own Foundation. Concluding a three year lifespan which involved many stakeholders from all levels of 12 NYC colleges, 50 participants, three local challenge partners and an impressive list of experts and contributors.

In December 2018, the authors sent out a survey to all 50 participants of the program (2016, 2017 and 2018). The purpose of the survey was to accurately evaluate the program against its ability to be a catalyst for healthy and diverse social connections between participants, have a positive effect on their career pathways, and also their continued use of innovative methods.

The survey was created on Google Forms, and former participants were recruited via email. There was a 70% response rate to the survey - 35 out of a possible 50 - with an even spread across cohorts, 14 from 2016, 10 from 2017, and 11 from 2018.

## Survey Results

Innovate NYC offered participants a unique immersive opportunity to work in interdisciplinary teams and directly apply human-centered design methods and mindsets in order to tackle a real city-based challenge. The data which the authors gathered through the survey can give some robust indicators as to the short term impact on participants post-program.

### *Did iNYC increase the size and diversity of the participants' social network?*

The researchers estimate that Innovate NYC has been a catalyst for approximately seven new strong connections and over 90 weak connections between participants. Connections were diversely spread between students from different colleges.

Diverse networks are valuable for future career development (Shipilov et al., 2007), and improve one's ability to work in interdisciplinary, cross-cultural teams. Indeed in over a dozen cases, participants have already found these connections helpful when making career choices or in gaining business introductions (Figure 2).

## Helpful Career-Focused Post Program Interactions

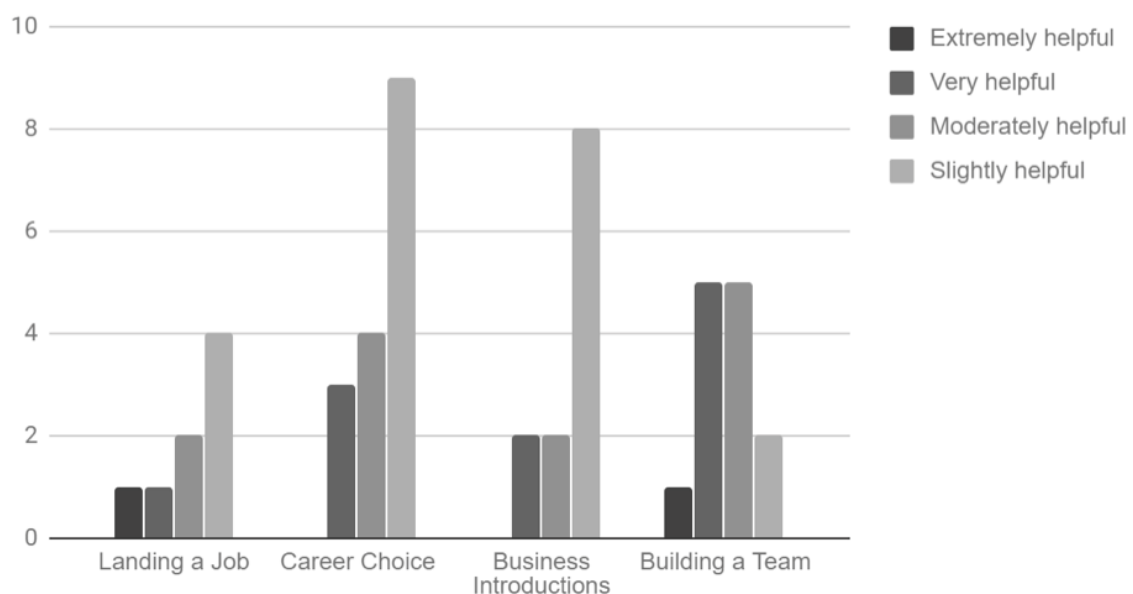


Figure 2. Participants who said that post program interactions were at least slightly helpful, taken from all cohorts (n=35).

*"I met a wide variety of people and put a new perspective in my life."*

- Innovate NYC Participant (taken from post-program survey)

### *How has iNYC affected participants career pathways and use of innovation methods?*

On average, participating in the program made students more likely to want to work in an innovation related career with a mean response of 3.3 on a five point likert scale. Meanwhile 97% percent believed that they would use human-centered design in the future (Figure 3).

Many survey respondents said the program helped them validate ideas they had about careers in business and/or social innovation, allowing them to experience the design and consulting process first hand. Others noted that it was great for their CV and experience, in this way it validates such a program as a genuine competitor to internships, which offer similar value to students. Meanwhile at least nine of the thirty-five

respondents have graduated and are now working in a job that, based on the title, would likely involve business innovation.

In a time where being able to apply design methods helps bridge the skill and mindset gaps facing workers today, the authors found that Innovate NYC's 20th century approach of learning by doing, based on John Dewey's education theory (1938) and David Kolb's model of experiential learning (1984) combined with HCD (Cooley, 1989) and social entrepreneurship lean methods (Kickul & Tohmas, 2016), was an effective format for students to learn the approach first hand, learning from mistakes directly with a real societal problem and community partner need instead of studying the concepts.

*"iNYC gave me important experience that will be relevant not only in my current position but in the plans I have for my career as a whole."*

- Innovate NYC Participant (taken from post-program survey)

Did participation in iNYC make it more likely that you would choose a career path that includes innovation and human centred design?

35 Responses

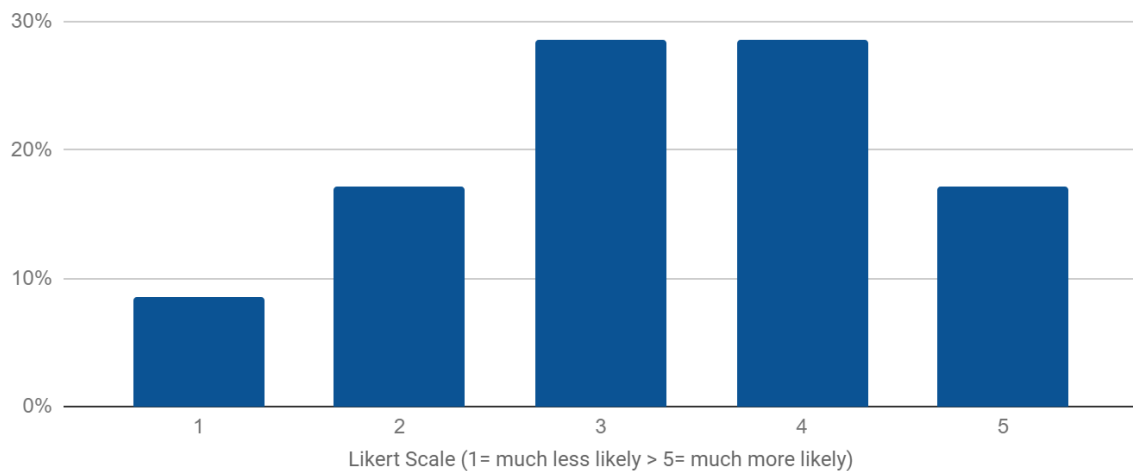


Figure 3. Participants who said that post program interactions were at least slightly helpful, taken from all cohorts (n=35).

### *Exposure to 21st Century skills, mindsets, and working in interdisciplinary teams*

For many participants, Innovate NYC was their first time being exposed to design and innovation methods including user research, system analysis and mapping, ideation techniques, prototyping, and storytelling. They also learned transferable collaboration skills and tools such as conflict management amongst colleagues with different working styles, peer coaching, and client management, that can help them form and enrich future teams they work with.

Students from each cohort overwhelmingly agreed that after iNYC they are much more likely to want to work in diverse teams (Figure 4). They said it would inspire them to what to work in diverse teams, and that participants mainly saw value in offering them a new perspective.

21st-century jobs are affected by many factors including environmental sustainability, urbanization, increased inequity, political uncertainty, technological change, globalization, and demographic change (Bakhshi et al., 2017). Creative, design and engineering have bright outlooks according to Bakhshi. Championing design thinking and creative problem solving would allow students to remain employable throughout their lives. Higher order cognitive thinking like originality and active learning are also important. There is a need to negotiate the global context of work which will continue to expand (Dulebohn, 2017).

There is an eminent need to address the modern world of work skills gaps highlighted by the World Economic Forum (n.d.) and human resource firms (ManpowerGroup, n.d.). PayScale published in a 2016 Workforce-Skills Preparedness Report findings from responses of almost 64,000 hiring managers across a wide range of industries who were asked about the disconnect between the skills students have when they graduate from college and the skills companies need. In summary, 60% of managers said new graduates do not have the critical thinking and problem-solving skills necessary for the job, 46% said new graduates lack the necessary communication skills, and 36% reported new graduates have inadequate interpersonal and teamwork skills. Design and creativity around a specific community problem can help with many of these required career skills as students are forced to learn quickly about a specific problem, organize as a team, and execute on a creative process resulting in a solution for a specific client.

### After the program, how likely are you to want to work in diverse teams?

35 Responses

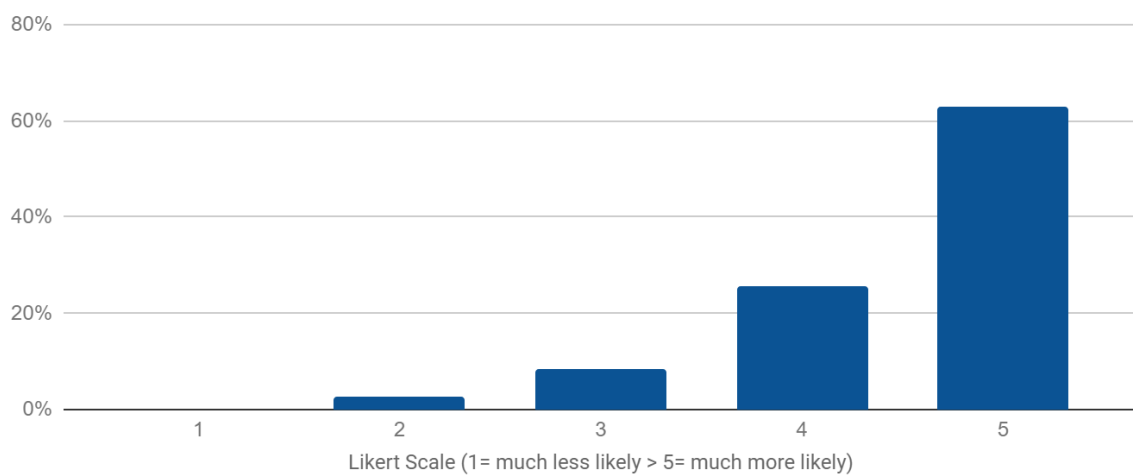


Figure 4: Participants on whether they were likely to want to work in diverse teams after taking part in iNYC (n=35).

*“[Innovate NYC] gave me the confidence to find innovative solutions to problems on my own and develop a team”*

- Innovate NYC Participant (taken from post-program survey)

## Key Learnings

In this section, the authors share the key learnings that emerged throughout the research and discussions:

*Coordination of iNYC took place in a VUCA environment, where change is the only constant.*

With each passing iteration the researchers began to realize that with the rapid changes in the higher-education landscape most of the university representatives unintentionally changed each year, as did the DO School facilitators. These sit alongside the time and resource challenges of real life non-profit partner organisation and students juggling choices and other opportunities. This constantly shifting environment was analogous to what is happening in the economy across sectors, a more volatile, uncertain, complex and ambiguous (VUCA) atmosphere was developing (Alexander et al., 2016).

*iNYC led to a small increase in the size and diversity of participant’s social networks.*

Clear limitations exist against the program’s goals of catalysing diverse connections across fields and class divides, most prominent of which is the short nature of the engagement. Sociologists have identified three conditions that are considered crucial to the development of friendships: proximity; repeated, unplanned

interactions; and a setting that encourages people to confide in each other while letting their guard down (Williams, 2012). Innovate NYC includes all three elements; however, the authors (two representing university stakeholders and one from the DO School) believe that it would have been possible to increase the number of strong connections and levels of interaction post-program between cohort members if the program were to:

- Be longer in duration - to enable more time for the group to build strong bonds
- Involve more interaction outside of workshop hours - allowing more socially focused bonding that could take place by living together, cooking together and more.
- Included Follow-up engagements post-program - ensuring social contact is maintained, maximising opportunities to support each other in career endeavours.

### *iNYC provided students with a valuable hands-on taste of a career in design*

The program was able to offer a short-term, hands-on glimpse into a career in innovation and HCD, carefully guided by expert facilitators. For non-design students, the program experience opened them up to the methods, and practices design innovators use, and they expressed these learnings were transferable to their chosen career paths. This was supported by research highlighting what non-designers bring to the design process (Morehen, Wrigley, & Wright, 2013). For those wanting to launch their career pathway in HCD, they require ongoing guidance and support far and above what iNYC could offer, both in time and input.

### *iNYC strongly demonstrated the benefits of working in diverse teams*

Not only did feedback suggest that the diversity of participants was a clear highlight of the program but also that the students would be very likely to want to work in similar environments in the future (receiving a mean score of 4.5 on a five point likert scale).

The 2018 cohort included participants from nine countries and vastly different backgrounds, but despite their diversity each participant offered unique value and knowledge to the program. By way of example, a number of the local students offered direct experience and empathy to the challenge which no international could share, but the international students brought new perspectives and in some cases experience with the design process which helped guide solution and prototype development. This corroborates the benefits other researchers are finding with an international student perspective in the classroom (Beykont & Daiute, 2002).

### *Applications to the industry*

Such a program could potentially offer opportunities for addressing mid-career skill gaps as cycles of economic and industry change become more frequent (Rosen & Jerdee, 1992). A tailored version of iNYC could offer someone looking to pivot their career a chance to gain exposure to new working styles and apply new methods while still offering a unique and valuable perspective to a challenge, based on their previous experience. It might also act as a format for different stakeholders in an industry to work together tackling a sector-wide problem while concurrently building connections across silos and giving those involved a fresh perspective and ability to support one another in a rapidly changing world.

### *Next steps*

The data gathered about these three cohorts has the potential to become a longitudinal study. At the time of the survey, former participants were still in the early stage of their career, and hence identifying any actual long term impact from such a program will require time.

## **Conclusion**

Innovate NYC was developed using innovation techniques and HCD as an extra-curricular program in response to a pressing shared challenge recognised by key stakeholders from the New York City higher education landscape. The program itself, which ran for three years, brought together a diverse spectrum of NYC college students and stakeholders, exposing many for the first time to design approaches and interdisciplinary teams, across universities and colleges and socio-economic divides to address some of the 21st century skills gap. It helped some students validate their career path, build hands-on project experience, and it exposed them to diverse new perspectives and networks which may play an increasingly valuable role as they advance in their careers.

Our evaluation of the program has touched on the difficulty of managing such a program in a VUCA world, the importance of quality time together in the building of lasting connections, the value of diverse teams in innovation and, hands-on 'learning by doing'. These lessons can be applied to any similar program that aims to bring together diverse stakeholders or teach human centred design skills.

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## APPENDIX : POST-PROGRAM SURVEY RESULTS

### *Qualitative Feedback:*

Participants valued the diversity of people they met during the program, including fellow participants but also amongst experts and during the research phase. Specifically, they liked that it offered them a fresh perspective.

*"I met a wide variety of people and put a new perspective in my life."*



*“The different types of people we interviewed and the people types of people I met from around the world.”*

The program gave participants hands on project experience which enhanced their CVs but also helped some validate whether they wanted to pursue a career in innovation and design.

*“It solidified my desire to work in the innovation/design field.”*

*“iNYC gave me important experience that will be relevant not only in my current position but in the plans I have for my career as a whole.”*

It also gave participants a fresh perspective on interdisciplinarity and the value of diverse teams.

*“I definitely enjoyed working as a team and will look for that in my career.”*

*“Gave me the confidence to find innovative solutions to problems on my own and develop a team”*

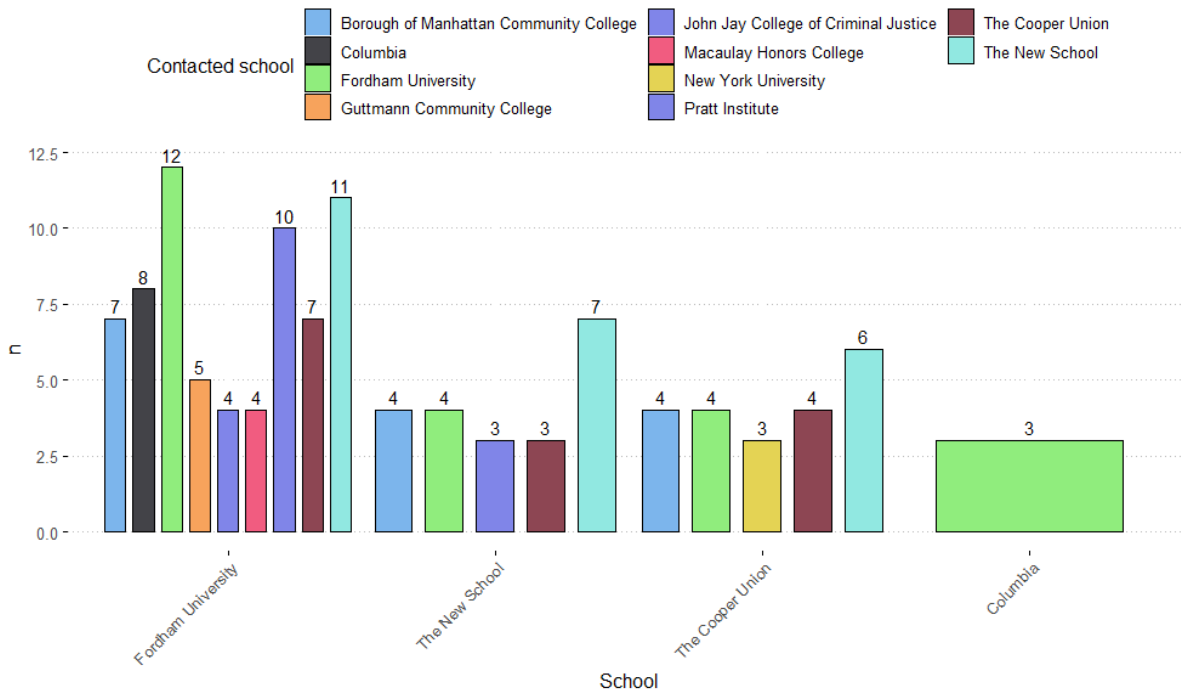
### **Quantitative Results:**

With regards to whether the program could be a catalyst for lasting connections the results were mixed.

The researchers asked each participant to identify which members of their cohort they have had contact with following the program. They could choose between 'several times' 'monthly' or 'weekly'. Aggregating the responses, the authors inferred from the data that for every two cases (one case is if someone denoted that they'd been in contact with another at a certain interval) would serve as an approximation for one two-way relationship. The researchers defined a weak connection as one where two people have connected several times since the program, and a strong connection when contact is made weekly or monthly. From this, the researchers conclude that there remain 94 weak connections and 10 strong connections between cohort members.

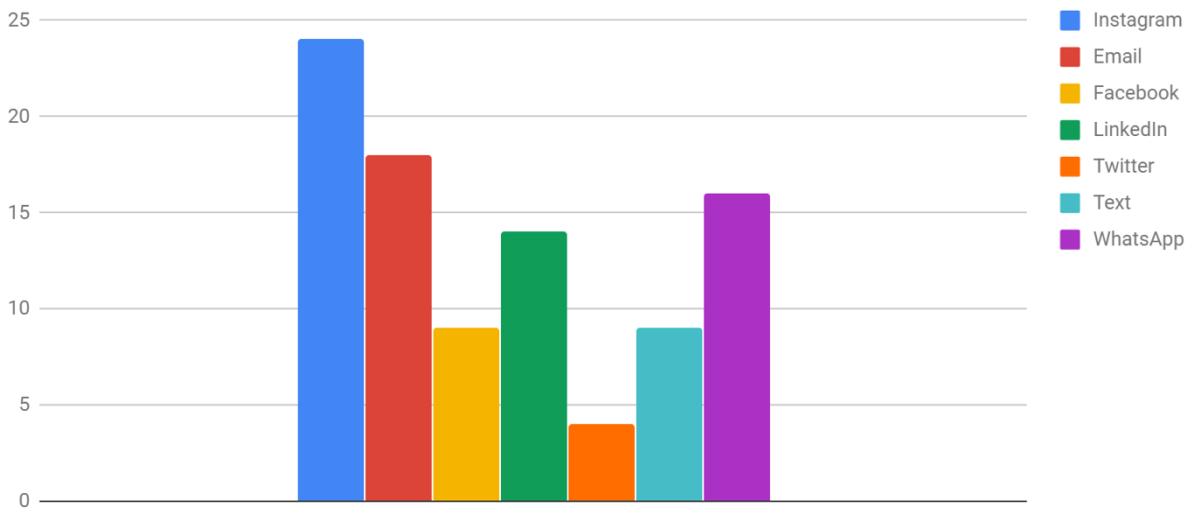
It is known that in three of these cases, a friendship already existed before the program and thus it is likely iNYC only had a limited impact in strengthening their connection. Leaving 7 new strong connections made from the three cohorts.

The following graph outlines connections made by students from different colleges, giving the authors an indicator as to the diversity of connections developed.



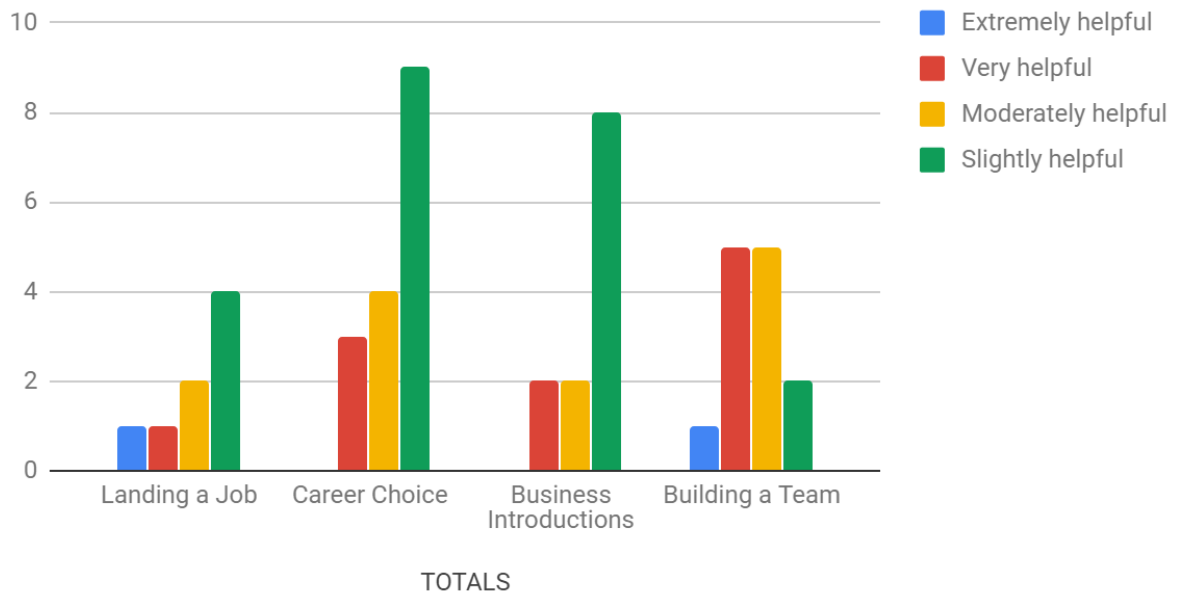
Participants connected with former participants across a range of digital media, however the most popular were Instagram, email and WhatsApp.

### Platforms for interacting with cohort members



Asked whether any post-program interactions were helpful for their career, 16 said that they were at least slightly helpful in terms of career choices, and 12 found them at least slightly helpful for business introductions.

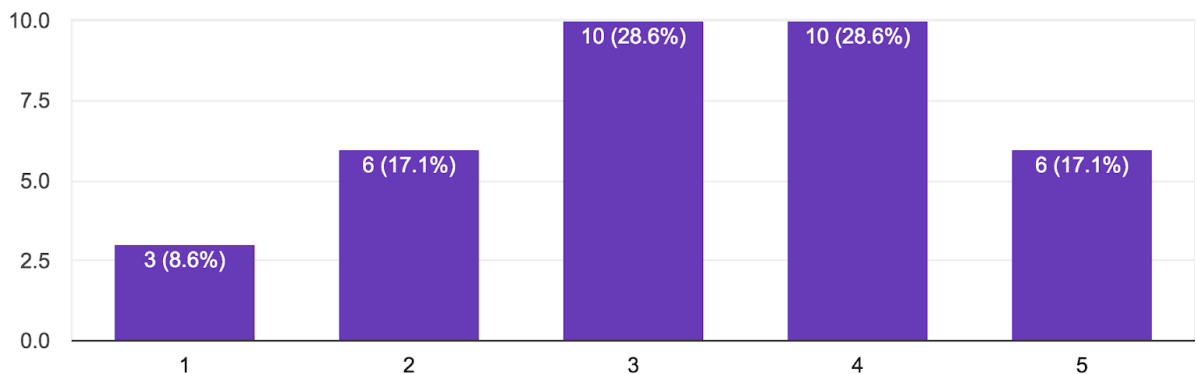
## Participants who had post-program interactions that were helpful



Participants felt that iNYC made them more likely to choose a career path that includes innovation and human centred design. They were asked to select a score using a five point likert scale, which resulted in a mean response of 3.3.

## Did participation in iNYC make it more likely that you would choose a career path that includes innovation and human centered design?

35 responses



Over 80% of responding participants also believe it to be likely or very likely they will use business innovation, HCD or lean methods in their career. Less than 3% (or one participant) say it's not likely they will use HCD in their career.

In response to a question about propensity to want to work in diverse teams, respondents overwhelmingly agreed that after iNYC they are very likely to want to work in diverse teams, post-program - receiving a mean score of 4.5 (from a five point likert scale)

### AFTER THE PROGRAM, how likely are you to want to work in diverse teams?

35 responses

