Beam Center collaborates with schools and creators to make meaningful learning and work accessible to all NYC youth.
Letter From The Executive Director

Danny Kahn and I started Beam Camp in 2004 because we feared that the nascent technology juggernaut offered parents and children a false promise of the future. We felt that the value of understanding the way things worked, working together and building things by hand was getting lost.

No matter how simple and seamless things get, the world for which we must prepare children becomes more complex, uneven and opaque by the day.

A decade of camp and four years of Beam Center’s work in NYC schools later, we have seen how creating opportunities for authentic creative problem-solving and physical collaboration can change lives and minds.

Our solution is not the only one, but it is powerful. We bring kids, teens and educators together with inspiring people, projects and places to make things they can love. They use tools, models and processes that create pathways for continual learning and meaningful career options. Come see it in action. Come to Beam Center on Friday mornings as MS 442 6th graders make DIY Boomboxes or visit Brooklyn International High School’s new FabLab. In the summer, see Beam campers build large-scale projects in New Hampshire and smaller, but equally innovative ones in Brooklyn. You’ll find students, creative experts, and teachers sharing the excitement and challenge of connecting learning to doing. As we’ve done for our faculty of artists, engineers and designers, we’re preparing young people to pass on their experience and knowledge to younger people in their own communities, as FabLab techs, camp counselors and mentors.

In 2015, Beam Center expanded our work with the NYC Department of Education, and charted a roadmap for further collaboration with government and other youth-focused organizations. We believe that sustainable change for all New York City youth is a product of these kinds of partnerships.

If you, like us, believe that all children should be prepared to thrive in any future, join us in building learning and youth development communities in New York City and beyond.

Thank you for Beaming.

Brian Cohen
Executive Director
About Beam

Beam Center powers youth development and learning with creation, collaboration and educator professional development. Our programs integrate art, design, science and engineering with academic objectives to support student pathways to career and higher education. Aiming to close the achievement gap, we create learning communities in and out of school for youth (ages 8 to 18 years old) and educators with inspired, technology-integrated projects and workshops. Students learn skills in welding, physical computing, carpentry, ceramics, textiles, video, programming and design as well as problem-solving, persistence and communication. Our programs help young people build their character, develop skills and prepare for a life of continual learning and meaningful work.

Beam Center, based in Brooklyn and serving all of New York City, is the 501(c)(3) outgrowth of a collaborative building program at New Hampshire’s Beam Camp founded in 2005. We started with a handful of sleepaway campers and have grown over the last ten years to reach over 3,000 kids in our workshops and school programs in Brooklyn and throughout New York City. We inspire lifelong learners, mentors and creative thinkers.

Creating Beamers since 2005
BEAM IN SCHOOLS

BeamWorks
Public School Partnerships
Beam Center faculty collaborate with teachers on curriculum-aligned art/tech projects with public middle and high school students throughout NYC, in and out of the classroom.

Connected Teaching
Educator Professional Development
NYC public school teachers explore digital fabrication, creative computing and project-based learning to develop multi-disciplinary curriculum in collaboration with Beam Center faculty.

BEAM WITH TEENS

BeamWorks Youth Learn and Lead
Youth Apprenticeships
11th and 12th graders from our partner high schools learn technical and teaching skills, build a large scale collaborative project and design craft-based learning activities to share with younger students.

Beam Camp
New Hampshire sleepaway summer program where campers learn making and collaboration skills and build a spectacular large-scale collaborative project chosen through an annual worldwide design competition.

BEAM IN THE COMMUNITY

Beam Center Afterschool Workshops and Day Camp
Out-of-school programs for students in 2nd to 8th grades
Our workshops blend technology, craft and imagination and are led by Beam Center faculty and BeamWorks Apprentices.

Insight Into
Weekend Workshops for Teens
Free weekend workshops for middle and high school students to work intensively in an expert’s creative practice. We also host field trips and one-day workshops (sponsored by community partners) throughout the year.

Inventgenuity Festival
Annual Community Celebration of Making Things
Winter weekend of workshops, projects and demonstrations led by Beam faculty and other expanded learning organizations. Since 2009, 1000+ families have participated in Inventgenuity.
2015 Beam Program Participation
Collaborating with nearly 3000 students and teachers

Over 90% of our participants in 2015 (students and public school teachers) took part in Beam programs free of charge.
Collaboration in the Classroom
Projects That Promote Equity and Integrate Knowledge

BeamWorks
Digital Poetry Machine, Solar-Powered Murals, Parabolic Reflectors: these are a few of the projects that Beam Center artists bring to NYC middle and high schools. Student excitement is palpable as hand-made projects come alive with light, sound or motion. Abstract concepts become real and deep connections are made as students understand the way things work for the first time. Beam projects are fun, but they are more than “just” fun. They spark creativity, integrate technology with academic subject matter, and are designed to leave room for a student’s own interpretation and growth.

Beam projects are collaborative and combine hard skills like welding, computing, or woodworking with soft skills like persistence and teamwork. Our approach is motivating, accessible and inspiring to a wide range of students. In 2015, our programs reached over 2,000 public middle and high school students ages 12 to 17 (primarily from free-lunch eligible schools with a majority Black, Hispanic or newly immigrant populations). Our aim is to close the achievement gap by connecting with youth with diverse learning styles and academic experiences. Our programs help at-risk youth stay on target to graduate and support them to take a path to continued learning or employment.

Partner Schools:
Fannie Lou Hamer Freedom High School • Bronx International High School • Bronx Academy for Software Engineering • Urban Assembly School for Design & Construction • Carroll Gardens School for Innovation • Lab Middle School • Manhattan International High School • South Brooklyn Community High School • Midwood High School • Brooklyn International High School

BeamWorks and Connected Teaching 2015 By the Numbers

<table>
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<tr>
<th>BeamWorks Student Growth</th>
<th>BeamWorks and Connected Teaching</th>
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<tr>
<td></td>
<td>IN SCHOOL PROGRAM</td>
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<td>APPRENTICESHIP PROGRAM</td>
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<td>EDUCATOR DEV. PROGRAM</td>
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<tr>
<td>2400</td>
<td>2111 Students</td>
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<tr>
<td>1800</td>
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<td>23 Tech/Art-Integrated Projects</td>
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<td>100 Hours of Training</td>
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<td>18 Placed in Summer Jobs</td>
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<td>2013</td>
<td>2014</td>
</tr>
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Collaboration with Teachers
Inspiring Educators and Creating Culture Change in Schools

Connected Teaching
Beam Center engages teachers and educators to support sustainable change in New York City public schools. Connected Teaching is our professional development program that strives to create a network effect: engage a teacher in the classroom, train that teacher in the skills and concepts of hands-on learning, give support so teachers can “pass it on” to other teachers and their students.

In 2015, with support of the Hive Digital Media Learning Fund, we held our first Connected Teaching workshops at Beam Center, training 22 teachers from six schools. By the end of the intensive training, the teachers are devising their own lessons, rooted in curriculum but energized with a hands-on learning component. These teachers are set to reach many students in the classroom in a new way as well as to become leaders in their own schools.

We also piloted a free evening workshop series that brought 75 teachers into our Beam Center workshop and in 2016 we will focus on building a learning community of educators working in Red Hook, Brooklyn.
BeamWorks Youth Learn and Lead Collaboration with Youth In New York City
Building the Connection Between Learning, Leadership and Service

Our BeamWorks Youth Learn and Lead (BYLL) apprenticeship program provides an intensive skills development, training and workshop experience (over 100 hours over the course of 20 weeks) for high school juniors and seniors. In 2015, BYLL was funded by Pinkerton Foundation, ExpandEd Schools and the NYC City Council.

This year, BeamWorks teens:

1. Built a large scale collaborative project called “The Personal Planetarium, a 11’ x 8’ geodesic dome-shaped planetarium, constructed from welded steel, covered by black textile, and embedded with Arduino-controlled fiber optics to display star patterns.

2. Learned eight project-based learning activities centered on Astronomy that they in turn taught to younger children as counselors at the Good Shepherd Services and CAMBA-run summer day camps in Red Hook and East New York.

3. Had mentoring for summer job placement and college applications by Beam staff.

4. Were invited to participate in Astronomy Night at The White House on October 19, 2015, with Sofy Alvarez right on the stage with President Obama, coaching him on using a telescope.

The small size of the BYLL group allows for Beam Center staff to get to know each young person. We create a family-like atmosphere where the teens are learning and working side by side with adults who are expert designers, coders, artists or engineers. We counsel each student on choosing the best-fit internship opportunities as well as providing specific education and career advice, including resume-writing and job interview skills.
Collaboration in New Hampshire
Building Spectacular Projects and Forging Lifelong Bonds

Beam Camp
Since its founding in 2005 by Brian Cohen and Danny Kahn, Beam Camp has served 1,200 campers aged 7-17 and provided families with over $1,000,000 in scholarships and tuition assistance. The camp has been the inspiration for Beam Center’s approach to project-based and collaborative learning and its primary engine for staff development. Located in Strafford, New Hampshire, Beam Camp has garnered international awards and media attention for its unique collaborative building program and spectacular projects.

In 2015, Beam Camp became a wholly-owned program of Beam Center and integral part of its mission. In 2016, Beam Camp will refine its summer program to sharpen the focus on skill-building, collaborative challenge, responsibility and mentorship, and deepen its commitment to engage youth from Beam Center's partner public schools and Community Based Organizations.

Beam campers progress as creators and collaborators while developing their own identities as learners, doers, friends, and leaders.


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**Beam Camp**
**By the Numbers**

**SINCE 2005**

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**IN 2015**

<table>
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<th>181</th>
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<tr>
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<td>Countries of Origin</td>
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“Beam Camp means to me a place where anything is possible if you put hard work into it. A place where you meet new people and make new friends and memories.”

Emorey Williams – Beam Camp Leadership Fellow
Collaborating with Families and Community-based Organizations
Creating a Network Effect for Learning among Kids and Adults

Beam Center reaches NYC youth in Brooklyn, Manhattan, and the Bronx, and will soon work with students in Queens. Our main workshop and office in the Columbia Street Waterfront District borders Red Hook, Boerum Hill and Carroll Gardens. We are always looking to reach out for new collaborations and partnerships to benefit NYC youth.

In 2015, we

- moved to Beam Center’s new location at 60 Sackett Street, creating a makerspace designed for fabrication, creativity and hosting a wide range of students, educators and community partners in our events and workshops
- piloted “Insight Into…” free weekend middle school workshops
- hosted various out-of-school workshops, including
  - CGSI Fridays, weekly visits from MS 442 6th graders through the year
  - Design & Materials Intensives for the MOUSE Design League and 12th graders from Coney Island Prep
  - Summer and Afterschool host to Open Source/KOKO

Afterschool Workshops & Day Camps
In Beam Center’s Afterschool Workshops, elementary and middle school students explore projects in technology, imagination and craft with our faculty after school, on weekends, and during school breaks.

The Beam Center Afterschool program serves as a laboratory for project and curriculum development for our faculty. Ideas take shape, faculty can test-drive concepts in small groups, and kids can experiment with materials. Lessons from this process become embedded in our classroom and school-based practice. Afterschool Workshops are also an important job skills and training platform for our BeamWorks teen apprentices who we employ as assistants. We offer tuition-free enrollment to students nominated by Red Hook Initiative and local schools.

At our Summer and School Break Day Camps, kids explore a single concept, theme, or raw material through different media and creative practices with Beam Center’s faculty. Past themes include: Light, Multiples, Balance, and Sound. Kids make connections between the disciplines they explore and collaboratively document their discoveries and creations.
Inventgenuity Festival
Every year, our Inventgenuity Festival gets bigger and better. In 2015, we hosted 400 families and Brett Van Aalsburg built a large Balance machine with BeamWorks teen apprentices and festival participants. Each child customized their own balance machine using a laser cutter; then all participants’ machines were combined into a massive, moving sculpture at the end of the festival. In 2016 we will host it in one of our partner schools MS 442 to expand capacity. We expect 900+ to attend.

“The opening of our FabLab demonstrates the power of community organization partnerships to transform educational opportunities.”

Kathleen Rucker
Principal
Brooklyn International High School
Collaboration with Local Community Based Organizations
Fifteen BeamWorks teens were offered paid jobs to teach the City Astronomy curriculum and serve as counselors at the Good Shepherd Services and CAMBA-run summer day camps in Red Hook and East New York.

In partnership with Brooklyn College Community Partnership and funded by the Hive Digital Media Fund, we piloted the 32-week Steel Pan Lab. Moving from metalwork to music, twenty-four students from STAR Academy at Erasmus High School made steel drums, learned to play them and explore the intersections between the analog and the digital in considering new ways to incorporate the motion of drumming into the world digital programming and physical computing.

Collaboration with Local Public Schools
In May 2015, BeamWorks teens were an integral part of P.S. 10’s first STEAM Festival and fully conducted six astronomy workshops for over 500 younger students in South Slope. We are participating in similar fairs at P.S. 29, P.S. 321 and P.S. 107 in early January 2016.
“The Beam Center keeps bringing me back to the atmosphere of passion for learning and for benefiting our community. Being an intern at Beam, making one of a kind items, helped me define my spirit and develop the skills of professionalism, teamwork, creativity and more.”

Edwin Gao
BeamWorks Intern
Brooklyn International High School
## Financials

### 2015 Expenses*

- **TOTAL PROGRAM EXPENSES**: 83.1%
- **MANAGEMENT & GENERAL**: 16.1%
- **FUNDRAISING**: .7%

### 2015 Revenue*

- **TUITION**: 56.9%
- **GRANTS**: 16.3%
- **CONTRACT INCOME**: 12.1%
- **DONATIONS**: 12.2%
- **OTHER INCOME**: 2.5%

### Revenue & Other Support

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### Expenses

**Program Expenses:**
- **Educational Expenses**: $1,136,000
- **Total Program Expenses**: $1,136,000

**Supporting Service Expenses:**
- **Management & General Expenses**: $219,979
- **Fundraising Expenses**: $11,765
- **Total Supporting Service Expenses**: $231,744

**Total Expenses**: $1,367,744

**Excess of Revenue Over Expenses**: ($64,648)

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“Beam has emerged as a blended learning powerhouse helping teachers, students and school staff integrate creativity and curriculum.”

Leah Gilliam
In NYC: Poetry Machines and Other Surprising Collaborations

“This paper highlights the best of making in education, as it discusses the integration of multiple subjects (poetry, physics, programing, etc.) in a way that empowers students through showcasing their work.”

Accepted Paper Review
Developing Digital Fabrication Culture Through Big Scale Collaborative Projects

“Beam Center has been a revelation in the public middle and high schools lucky enough to work with them.”

Joy Nolan
NYC Department of Education Mastery Collaborative OPSR

“Students were learning much more than teachers can provide on their own, developing unique skill sets and interacting with professionals in the fields they want to enter.”

Commission Report
New York Smart Schools
# Beam Is Made Possible by...

We would like to thank these foundations, businesses, families and individuals for their support between January 1, 2015 and December 31, 2015.

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Thanks to all the families who have shared your kids with us and contributed to the Beam Community.
$25 - $149

Luella Adan
Olaronke Akinmowo
Jennifer Allen
Christine & Scott Apostolou
David & Susan Beattie
Abigail Best
Arlene Burlant
Kimberly Bush & Miguel Castillo-Lopez
Merena Carter
Tak Cheung
Archie Lee Coates IV
Sandra Damashek
Mitchel Friedman
Candice Gold
Ingrid Guiter
Pernilla Hagbert
Dana Hawkins
Jeremy Hawkins
Karolyn Hatton & Gerry Beegan
Andrew Hilsberg
Catherine Hnatov
Angela Kramer
Mike Lawley
Natalie Leder
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Craig & Taura McMeekin
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Julie Peck
Laura Rosenthal & Mark Williams
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Judith Ruland
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Jocelyn Siegel
Karolyn Silver & Kamen Atanassov
Gina Sonder
Technical Nameplate Corp.
Marie Vadillo-Glasier & Gregg August
Emily Wilson & Corey Henderson
Christine Yoon
Lucien Zayan

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Fabian Jabro - Secretary
Peter Wright - Treasurer
Kathy Larchian
Mike DeSutter

Executive Director and Co-Founder
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Afterschool and Camp Program Director
Matthew Robinson
BeamWorks Program Director
Nancy Otero
Professional Development Director
Grace Freedman
Development Director
Zena Pesta
Curriculum and Program Design Director
Allen Riley
Curriculum and Program Design Director
Casaundra Broadus-Foote
Beam Camp Director

Beam Center Faculty
Brett Van Aalsburg
Mark Kleback
Heather Kramer
Mitchell Dose
David Golann
Andrew Brehm
Jeff Wood
Alex Nathanson
Elizabeth Hurst
Tim Flte
Tim Harrington
Pilar Perez
Jessie Levandov
Chritian Diaz

Report Design: Mike DeSutter
Photography: David Golann, Zena Pesta, Emily Wilson, Danny Kahn, Kathryn Wallem, Nancy Otero, Pilar Perez, Allen Riley
Beam Center
60 Sackett St
Brooklyn NY 11231

contact@beamcenter.org
718-855-7600

beamcenter.org
facebook.com/beamcenternyc
@beamcenternyc

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