



FREE
SCIENCE
WORKSHOP

Annual
Report

2018/19

Welcome to our Annual Report

2018/19

In our second year of operation Free Science grew in many ways. A 64% increase in participation and new collaborators brought our unique blend of science inspiration and self-empowerment to a larger community. Read ahead to find out more!



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Statement FROM A FOUNDER

Visiting the Science Workshop is like riding this homemade hovercraft: your first impression is “this is crazy, noisy, put together out of junk, but oh my gosh it looks so amazing”and it really is! When you walk into a busy day at the workshop you’ll see things flying, bubbling, slithering, whirring, and zapping and a whole bunch of neighborhood kids freely exploring and constructing. Those of us who grew up with opportunities to roam in nature, tinker with machines in the garage, or make a creative mess know that this freedom is terribly important. This is how children learn. This is where life-long curiosity and a love of science is sparked. Yet not everyone has equitable access to these opportunities, something we are trying to change. We are deeply grateful to all of the community support that has brought this program to life in Ithaca. In the coming year we look forward to broadening our base of support and ensuring that this unique resource will continue to thrive.

Mission

Free Science Workshop is dedicated to equity in science engagement; we provide a free access, community-based space with a wealth of resources enabling low income and under-represented youth to explore their world, and expand their capabilities, through science and creativity.

What’s special about FSW?

Motivated first and foremost by equity of access to learning opportunities

Conveniently located in and near low-income housing to improve accessibility

No fee to attend and no paperwork required

Parent/guardian supervision not required

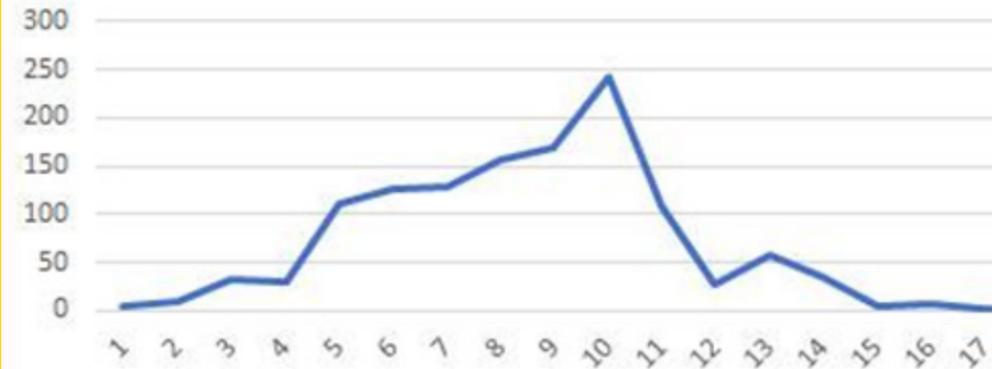
A unique combination of hands-on tinkering studio, woodshop, nature center, science lab

Makes clever use of commonly available, low-cost, reused materials

Open door, open ended, with mentoring and free choice activities

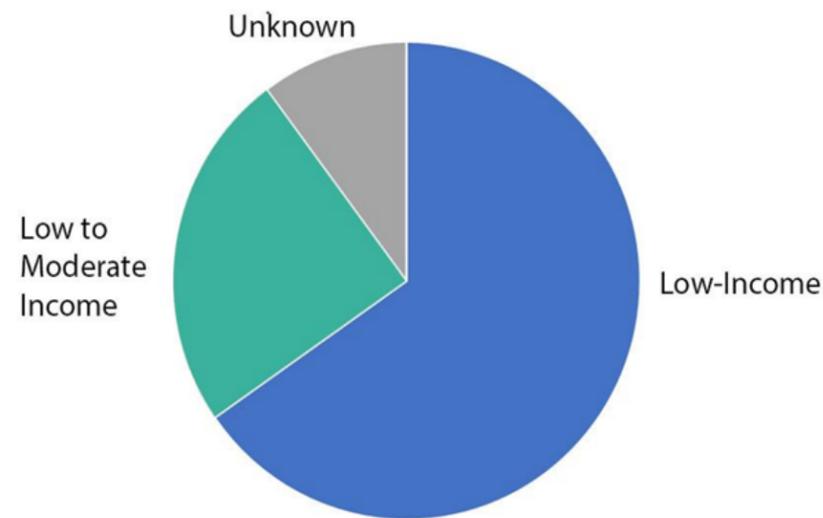


The Free Science Workshop Community



2018/19 By the Numbers

Income levels of 50 most frequent drop-in attendees of the Science Workshop

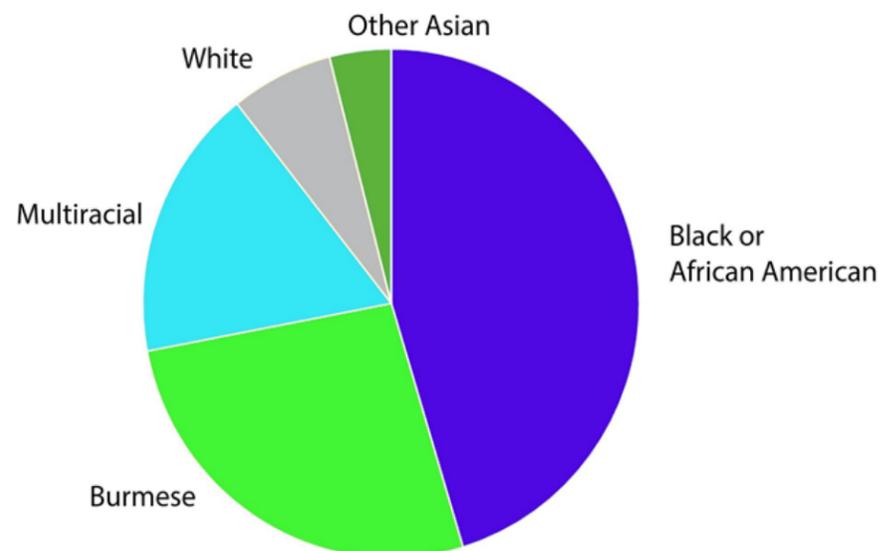


The average participant at the Free Science Workshop open hours is black, female, low-income, and 10 years old.

463
participants

Free Science Workshop focuses on serving communities that have been historically oppressed and marginalized.

Ethnicity of Drop-in Participants at the Free Science Workshop



4,759
total visits

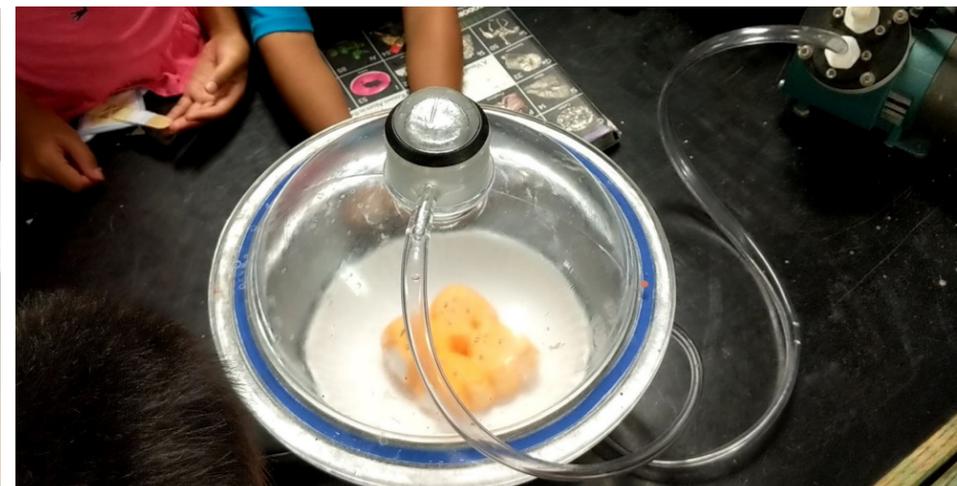
216
program days

“I am so happy! I am always happy when I get to do crazy experiments! Very happy!”

- 8 year old drop-in participant

At the heart of our program is our passion for SCIENCE. Focusing on personal, direct, hands-on exploration of real materials our program allows young people to discover the science around them everyday.

S c i e n c e



Some fun science projects from this year: make your own motor from scratch, magnet doll dance, sweepnets and insect catchers, gyotaku fish printing, paddleboats, mold gardens, brain models, penny batteries, using a multimeter, building a bike generator, DIY shake generator flashlight, windmills, piezo powered LED's, gingerbread architecture, science and history of papermaking, dissecting bald-faced hornet nest, hydraulic judobots, prosthetic arms, chemical handwarmers, DIY snowshoes, growing crystals, science "magic" and illusions, animatronic crank machines, gyroscopes and tops, seed bombs, carnivorous plants, embryology, colored fire, boomerangs, raising silkworms and harvesting silk.

Tinkering & Invention



Left: Each week new tinkering projects are available at the workshop. Some kids are so inspired that they return week after week to a project they were introduced to, making improved versions, such as this motorboat.

Below: GIAC STEAM Team helped build a giant Rube Goldberg machine the length of the workshop. It was a grand exercise of creative, out-of-the-box thinking and engineering. Check out the video on our website!

Right: Fun transforming cardboard and scraps on a summer Saturday into a DIY mini-golf course.



Examples of original inventions and self-initiated project ideas from this year: fish trap to use in the river outside; inventing lipstick out of everyday materials; spy glasses; DIY beyblade motor spun-up by 9V; holder for fingers to keep nails apart while drying; building an armored vehicle out of old electric wheelchair motors; self-righting drinking cup that always lands upright; doll clothes closet complete with mini-hangers; houses and enrichment materials for pet mice; original design for small pet water bottle; wooden platform shoes; Marvel costumes from re-used materials; beyblade arena with spinning edge deflectors; testing how much cacao powder you can add to homemade candles so that they smell like chocolate and still burn.



their own ideas



Food Delivery Cart for when Mom or brother are sick in bed



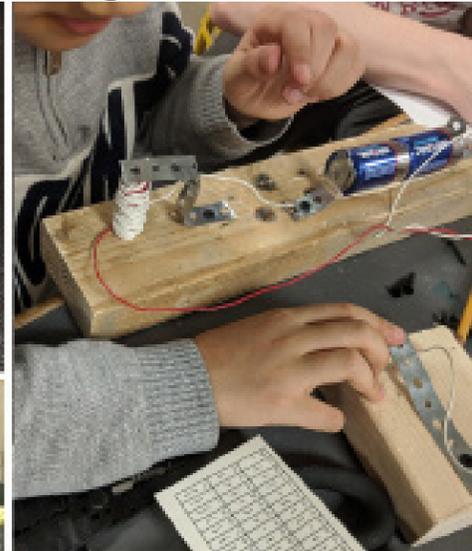
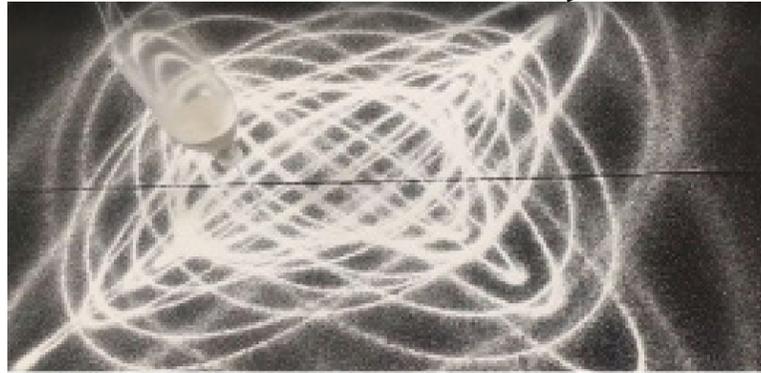
At the science workshop you can make whatever you can dream up!

One rainy Spring day a group of five girls decided to invent their own umbrellas out of catering trays, mailing tubes, and scrap fabric. Many projects are spontaneous and inspired by whatever someone needs and the wealth of materials available for re-use.

Thoughtful projects for parents, caregivers and teachers are popular. One participant designed and constructed a rolling cart to deliver meals to her family members when they are sick in bed. Another made a large organizer for her mom's shoe collection, and families have come in to build step stools, TV stands, and a low table for younger siblings to eat at that doubles as a chess board.

Other projects are more experimental in nature. This waterwheel boat for two is made of bike parts, PVC, and scraps is an original design.

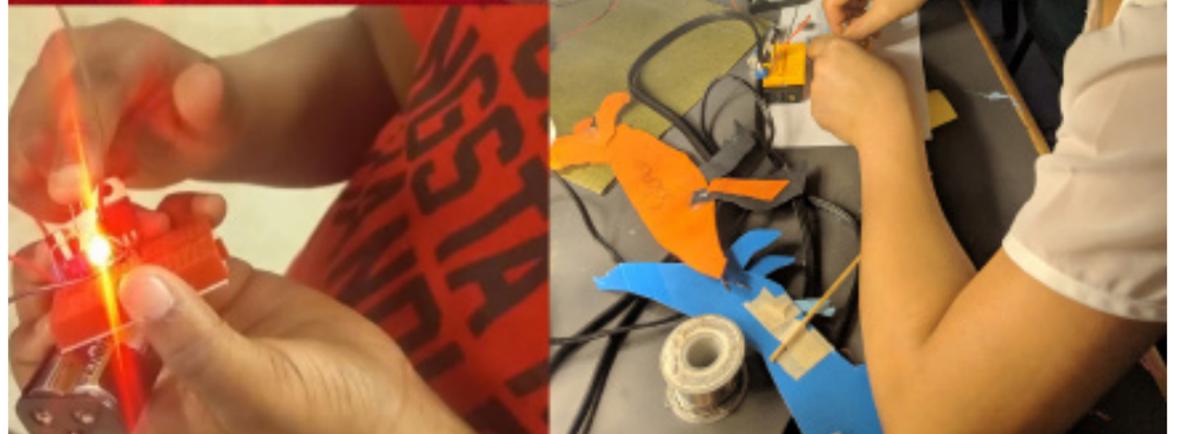
Second Saturdays = Family Nights!



Each month children and their families enjoyed free dinner and special hands-on science, thanks to generous support from the Community Foundation's Tompkins County Today and Tomorrow Fund, Myrtle Dee Nash Memorial Fund, and McPherson Family Fund.



A refugee mother with four young children visiting Family Night was shown how to take electronic components such as a resistor, potentiometer, light sensor, and LED and create a dark-sensing night light that turns on automatically. She laughed and smiled in delight when she was done "I thought it would be hard, but it was not hard!"



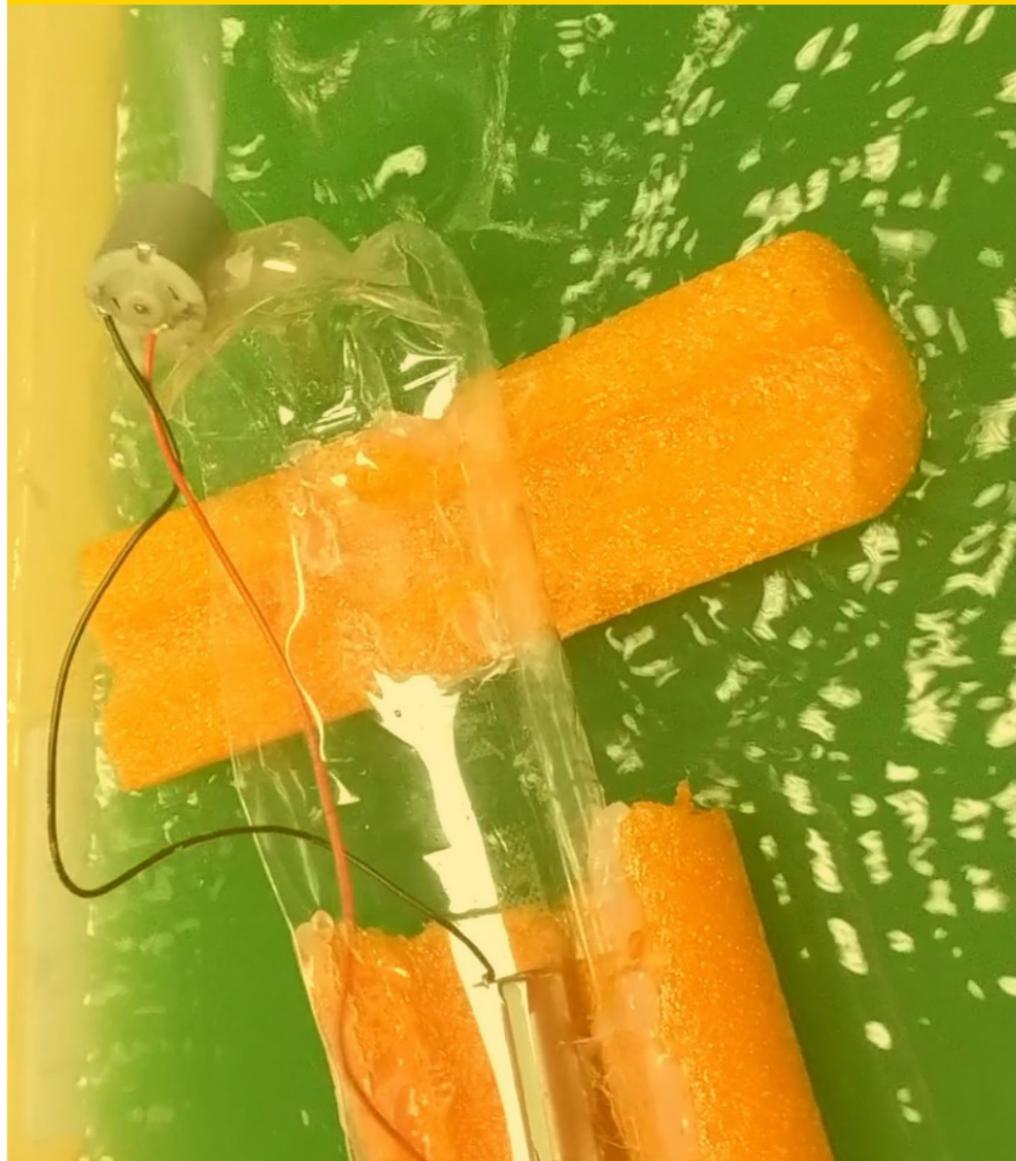
WEEKLY VISITS FROM COMMUNITY PARTNERS expand the reach of Free Science to youth and families living beyond the Northside. Building up from small take-home engineering and science projects to bigger long-term group challenges and projects, our community partner groups make full use of this “incredible community resource”.

URBAN 4-H OUTREACH

GREATER ITHACA ACTIVITIES CENTER (GIAC)

SOUTHSIDE COMMUNITY CENTER

DOWNTOWN ITHACA CHILDREN’S CENTER (DICC)



”

The Free Science Workshop provides our group with opportunities and learning experiences that are NOT available anywhere else in our city. Our children have been exposed to interesting and innovative science lessons and given many opportunities to think creatively. They go home with amazing creations every week.

We are very grateful for the opportunity...The Free Science Workshop is an incredible community resource!

- Chris Thomas, Lead Teacher
DICC School Age Programs



GIAC staff and students race during an FSW Summer challenge to design and build vehicles and boats. Below, a custom bike cart created by GIAC and FSW brings science exploration to a Southside Community Center celebration.



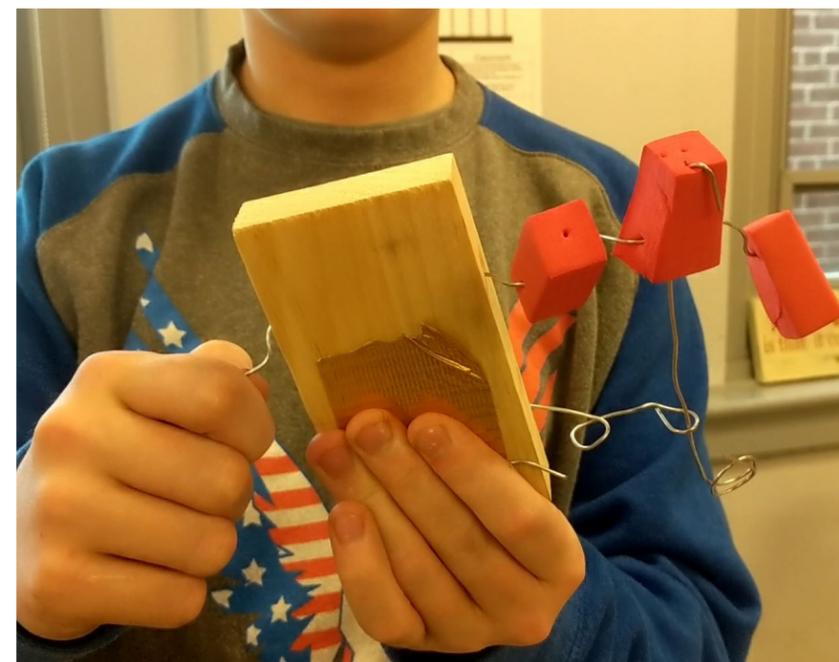
Outreach initiatives

From visits to underserved rural schools to pop-up programs in local parks, Free Science reached a broader community in 2018-19

"Aristotle said philosophy begins in wonder. By showing them something that triggered their curiosity and sense of wonder, I got to see that moment of wanting to know."

- Graduate Student Volunteer

"student excitement was palpable each visit" - librarian



STEM grad students delivered outreach for FSW, bringing a wide range of fascinating experiences to local parks, underserved neighborhoods, and public events. Left: exploring insect diversity and pheromone trails, and how you can trick live termites into following any line you draw!

Bringing the Science Workshop into the school day, 6th-8th graders in Addison NY enjoyed a series of creative engineering challenges, including "cranky contraptions" automata (left). Ithaca Public Education Initiative funded a pop-up invention studio in Enfield Elementary, and walk-over visits from Beverly J Martin Elementary to build Rube Goldberg machines introduced more kids in our area to our program.

parents say

"My partner and I are low-income, Black and queer community organizers. Our two children attend the Free Science Workshop drop-in hours three times a week. Every single day, they eagerly ask, 'Is the Free Science Workshop open today?!', and when it is, they willingly stay for the entire three hour duration, creating, inquiring, and learning- although to them, it all seems like fun and play! They pridefully bring home their own inventions, such as motorized box cars or pieces of fossils that they have excavated. Not only do our children love going, but I have

watched their creativity, confidence, and abilities expand. As grassroots activists, my partner and I realize the profound importance of exposure; we believe that preserving the imaginations of the youth is a way to proactively equip them to thrive in a world where lack of access is greatly what defines the margins. We are grateful to live in a neighborhood that encompasses a safe, social justice oriented space like the Free Science Workshop."

- TaZ and Jess Rite, Residents at 210 Hancock St

THIS IS THE GREATEST
FORM OF LEARNING
AND INTERACTING! YOU
ARE DOING EDUCATION
RIGHT!

"My 8 year old son with Aspergers syndrome finally is able to have access to guidance as well as supplies that relate to his specialties! He is not only gaining experience about the world around him... but he is also building the confidence he needs to be able to do it all. So so often children are told „No!“ Or „dont touch that!“ or „you can't do that you are not old enough yet.“ Well, my 8 year old is figuring out the mechanisms of animatronics, robotics, bicycles, gears, electricity, motors, and soldering thanks to the access allowed to him at the free science workshop! He gets to see his gifts flourish before him and I get recharge my personal batteries. We greatly appreciate all that you guys do...to us this is the greatest form of learning and interacting! You are doing education right!"

-Whitney, Zayden's mom

THEY PRIDEFULLY
BRING HOME THEIR
OWN INVENTIONS



Impact Stories

A CARING, SUPPORTIVE SPACE



9 and 11 year old sisters are part of a group of regulars who voluntarily attended Free Science almost every drop-in day last year. The younger sister, Jazzy, is fascinated by the menagerie of living creatures at the workshop. Of her own volition she carefully assembled the supplies and attend to the bearded dragon with love and care. Often high-volume and boisterous, she becomes calm and focused around the animals. She also enjoys painting empowering signs, examining things with the microscopes, and using power tools. Inspired by FSW teen interns she created a CIT program and made a special name tag for herself. She developed her own requirements for being a CIT including: "don't curse, don't hit, and help people with their projects". She has a strong sense of ownership in the program.



ENGINEERING CONFIDENCE

Jency, a 10 year old from the Burmese community at IHA Northside, began working with the Free Science Workshop staff three years ago through Urban 4-H. That first year he often apologized for not knowing how to do certain things that hadn't tried before, like connecting a motor to a battery. He was hesitant about trying new things and concerned that he would mess up. Over the years he has gained a wealth of engineering know-how, but even more importantly, he is confident in his own abilities and has a strong sense of agency. Now he strides into the workshop during drop-in hours and gets right to work - when we ask what his plan is, he says "you'll see!!" He and a friend worked together to turn old donated electric wheelchair into a motorized car they can drive around the neighborhood. They salvaged its motors, wheels, and control system, and built a vehicle frame out of plywood. They recruited more friends to hammer armor plating out of trashed electronics cases, which they did with great enthusiasm, imagining they were Thor. Where else could they have pursued a unique project like this? For youth like Jency FSW provides long-term, deep opportunities for skill development and personal growth.



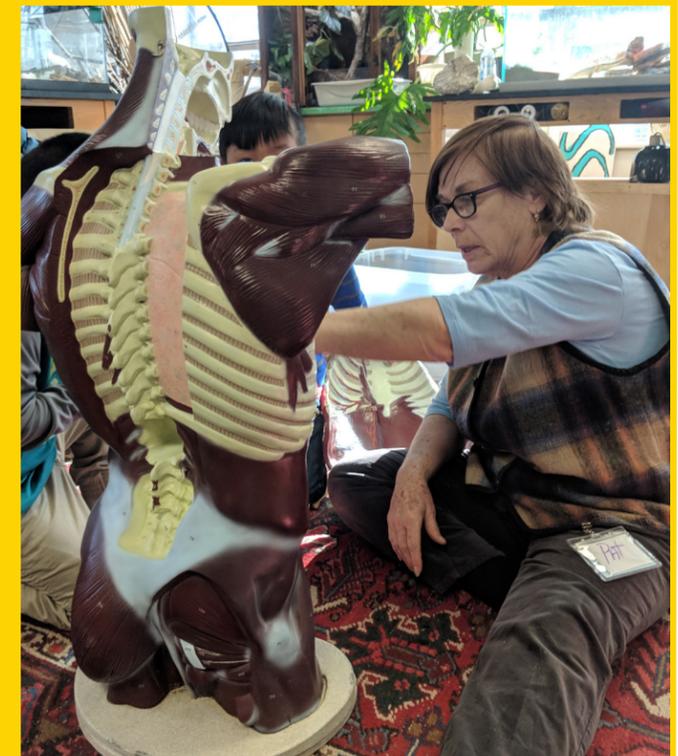
VOLUNTEERS

Thanks to our wonderful, dedicated volunteer force, every youth who walks in our door is given the freedom to direct their own inquiry and develop projects that are meaningful to them - a level of individualization that is only possible with the help of so many (49!) caring and skilled volunteers.

"It's pretty exciting and empowering... the magic and the wonder of real science. I'm so happy to be part of this wonderful experiment."
- Pat Shea, Community Volunteer



"Free Science Workshop was exactly the environment that I was looking for, and I am so grateful to have found it. It means a lot to me to know these resources exist in my community. I have also gotten to meet some amazing kids and learn a lot about science. Everything about this experience was positive and helped me personally learn/grow."
- Graduate Student Volunteer



FSW Teen Intern Program



A one-time Infymaker Award supported 9 paid interns this year, providing a first job opportunity to the teens, and near-peer mentoring for kids at the workshop. We welcome new sources of funding to sustain this impactful initiative.



Above: Interns get to explore all branches of science as they support participants with their projects. Here they are learning about the life history and ecology of fungi, and innoculating a mushroom log.

Left: Wakanda Forever! Teen interns preparing to represent Free Science in the Ithaca Festival Parade

Board of Directors

Chris Bell (Vice President, Secretary) has a Master's Degree in Education from Ithaca College, and taught 1st grade for 19 years. He taught his first five years in the Sacramento City Unified School District and the last 14 in the Ithaca City School District. In addition to his work in the classroom he has developed and run a number of afterschool programs including the School of Rock, science enrichment classes, and Art for Art's Sake.

Brandon Blas (Board Member) is currently the Youth Program Coordinator at the Greater Ithaca Activities Center. He has been working in youth services for close to 20 years. He has been supportive of programs that develop the growth of young people in the community.

Claire Fox (Chair, Co-Director) studied visual art and evolutionary biology at Cornell University. She has been a STEM educator and community organizer in Ithaca for over a decade. An avid life-long learner, Claire enjoys exploring everything from shark anatomy to physical computing. She loves to light the spark of curiosity and wonder in others. By co-founding a series of local nonprofit programs she has helped to create opportunities for marginalized audiences to engage positively with science.

Kitty Gifford (Board Member) is a public relations and marketing communications consultant focused on branding and media outreach campaigns designed to maximize organizational goals. For over a decade, Kitty organized Ithaca's Science Cabaret, which featured engaging conversations with scientists at local bars. Currently, Kitty teaches a science communication course at Cornell University and Shoals Marine Laboratory that helps undergraduates in the sciences communicate effectively to lay audiences. She holds an M.S. in Communications from Syracuse University, S.I. Newhouse School of Public Communications.



Erik Herman (President, Treasurer) has a Secondary Certification in Physics and a Masters in Teaching and Teacher Education in Science. As a 6-12 teacher he discovered CSWs and never looked back. A lifelong physics enthusiast and tinkerer, he revels in creating, with junk, things that elucidate obscure physics phenomena. He is also a founding member of the not-for-profit Physics Factory.

Cal Walker (Board Member) highly respected civic leader and a resident of Ithaca for over 40 years, co-founded the Village at Ithaca which has been recognized locally and statewide for its work in expanding educational opportunity, increasing access and furthering the cause of social justice in the community. Cal was a founding board member of Community Faith Partners, is a Rotary Club member, and has been recognized as a community leader through many awards including the BJM Human Rights Award, Lucy Brown Community Leadership Award, Titans of Tompkins (County) Award, and was selected as a Cornell Civic Leaders Fellow.

Anna Wilson (Ex-Officio Member, Co-Director) has a BS in Ecology, Evolution, and Conservation and a passion for all things do-it-yourself. She previously managed an NSF funded citizen science program and has contributed to ecological research in Puerto Rico, Colorado, Mt. Ranier National Park, and the agricultural fields of New York. She is a naturalist, lover of discarded objects, and sees the value of our vibrant community daily.

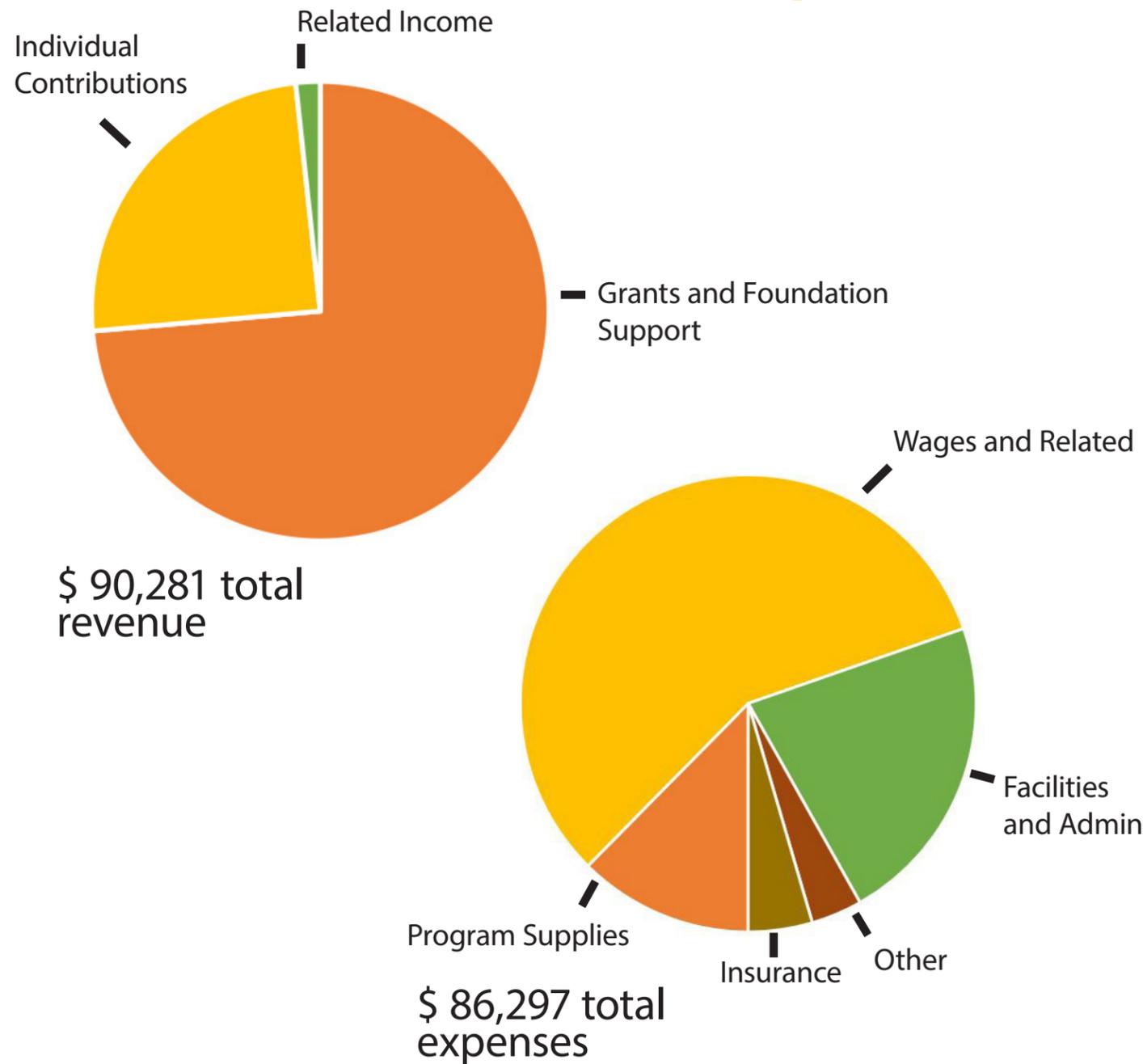
Advisory Council

- Denise Lee - Director - Founder Saturday Math and Science Academy
- Mac Knight - Principall, Dewitt Middle School
- Leslyn McBean - Clairborne - Director, Greater Ithaca Activities Center (GIAC)
- Jessica Ristow - Development Director, Restore the Earth Foundation Inc.
- Timothy Weber - Proprietor Software and Hardware Design, Six Mile Creek Systems
- Tiffany Fleming - Community Member, STEM Programs and Grant Development
- Ducson Nguyen - Alderperson for 2nd Ward and Software Engineer

Financial Report

Thank you to our Sponsors!

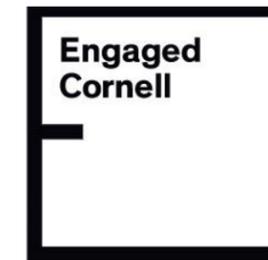
2019/2020



Tompkins County Today and Tomorrow Fund
 Myrtle Dee Nash Memorial Fund
 McPheron Family Fund



Teacher Grant



Engaged Opportunity Grant



Infymaker award

Individual Donors:

Dan Sudran, Gene Yarussi, Cal Walker, Kitty Gifford, Beverly Baker, Tenzin Tsokyi, Yamila Fournier, Leslyn McBean-Clairborne, Carol Banfield, Pat Fox, Xanthe Matychak, Anna Wilson, Mark Zifchock, Timothy Weber

Community Science Workshop Global Alliance

Did you know that Free Science Workshop is a proud member of a broader movement? The first Community Science Workshop was founded 27 years ago by Dan Sudran in the Mission district of San Francisco. National Science Foundation funding helped to launch additional sites around California based on Dan's original philosophy and methods. The movement is now global, with a series of new Science Workshops recently opening in Timore-Leste. In June 2019 directors and staff from Community Science Workshops in San Francisco, Fresno, Watsonville, Greenfield, Ithaca, and Timore-Leste came together in our first global conference to exchange ideas, projects, and lay the groundwork for future growth.

