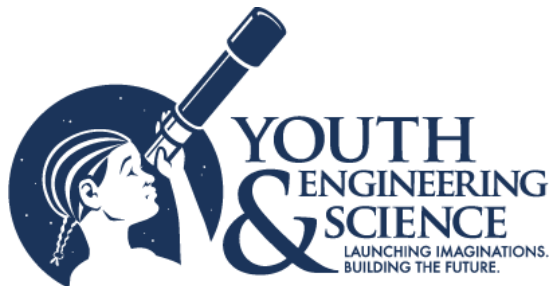
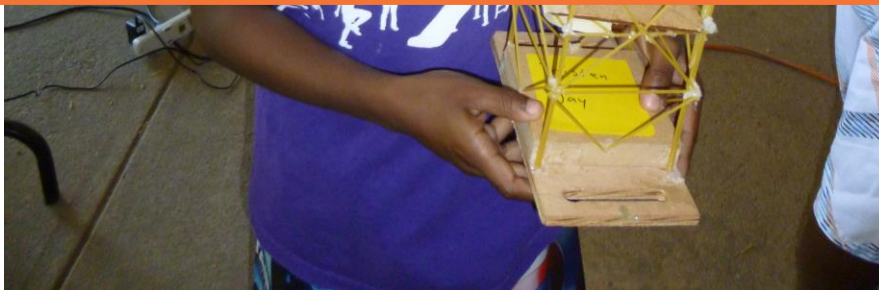




Annual Report | 2014



YOUTH ENGINEERING AND SCIENCE, INC

<http://youthengineeringandscience.org>

Message from the Director

2014 has been an incredible year for Youth Engineering and Science. We were able to reach our goals of inspiring 300 underserved youth in our programs this year, along with making strides in developing our leadership program.

Our mission is to enable every child to engage in high quality hands-on experiences in science and pre-engineering. We provide innovative STEM (science, technology,

engineering and mathematics) educational after-school, in-school and summer programs to traditionally underrepresented and underserved children through partnering with schools and community organizations. We mentor high school students, college students and teachers to help them gain experience teaching hands-on inquiry and STEM lessons and to develop self-confidence as STEM educators and leaders.

To strengthen our nation we must prepare youth to be able to contribute and teach others. We must begin with our children. Their dreams and energy are the greatest resources we have.



This past summer four teachers developed 9 different innovative hands-on STEM projects and activities. We mentored 11 high school and college interns to lead the activities for over 300 children at eleven partner organizations. We took our Youth Leadership Intern program to a new level this summer with more workshops on how to teach and lead science inquiry. We partnered with two schools to run after school and in-school programs. We partnered with the University of Pennsylvania Wharton School of Business to run an engineering workshop for their GUTS Girl Scout program for minority Girl Scouts.

One of our challenges in past years, has been establishing good communication with the directors of our partner organizations to ensure consistent conditions to support sound educational practices. We were able to improve this area by getting an earlier start in setting up our programs, by having more direct dialogue with the directors ahead, and by instituting written contracts and registrations fees. Getting to know our partners better this summer helped us create conditions more conducive to learning and teaching.

Kathy Walsh, Director

Message from the Financial Officer

To get more funding support for our programs, we increased our Neighborhoods Helping Neighborhoods fundraiser events from just one in 2013, to three this year. We ran a program for Next Level Sports in Ardmore, which was our first pay for service program.

Through our school programs, Girl Scout program and additional fundraising events, we have connected with new people in industry and universities which will help us learn more and forge future business partners to reach more underserved children. We were awarded a grant of \$2,500 from the Charles Ludwick Foundation to run an after school program in 2015. We won a grant from the Tow Foundation of \$5,000 to help us with our general operating costs of our 2014 summer program. We would like to continue to build our relationships with our supporters and work to secure a much larger funding base from corporations, private individuals and foundations.



Elizabeth Keegan, Board Treasurer

STEM for All Summer Program Activities 2014.

When people see the work our teachers and interns do and the types of activities we are doing with under-served children, they are often inspired to say that they wish they had that kind of science. Many people don't even know really what engineering is and are thrilled to see how exciting and how interesting it is to solve open-ended problems in a hands on way.

The following are the activities and project we created and implemented this past summer.

Crash Test Science

In this program children designed, created and tested a safety system to protect occupants (egg passengers) of a car during a collision. The children learned about Newton's Laws of motion and the important role of using their seatbelts when riding in an automobile. Each child earned a certificate of accomplishment for their car safety engineering solution. The chance to create a second, improved prototype gave the children a better idea about how develop their products and systems. Figure 1. Crash tests at Shepard Rec. Center



Figure 1 Conducting crash tests at Shepard Recreation Center

Trembling Tower Tournament



Figure 2. Building earthquake resistant towers at Baker Recreation Center

In this program, children discovered how structures stay up during earthquakes. They designed their own towers out of pasta to withstand an earthquake, which we simulated on an earthquake machine. To build a tower that would stay up, the children had to use structural design concepts and mathematics, and attend to careful measurement. Each child received a certificate with their photo holding their tower before the shake test. While all the children enjoyed this project, it was especially loved by one camp of autistic students and their counselors. Our interns really enjoyed the experience of working with children with special needs.

The Power of the Wind

In this program, children investigated Bernoulli's Principle and engineered a wind power turbine to see how much power it could generate. The way we tested the wind power turbines by how many washers they could hoist, was based on the true story of a boy from Malawi who saved his village from drought by creating a wind power generator out of junk that could pump ground water from a well. As part of the project we told this story about solving problems despite obstacles.



Figure 3 Children creating their wind power turbine at Tustin Recreation Center

Lotions and Potions

This program started with experimenting with mixing oil, dye and water to discover the properties of ingredients in cosmetic products. The next part of the program was all about the connection to living organisms. The children made slides of their own cells and viewed them with microscopes. In the engineering part of the project children designed and made their own lip balms, lip glosses and lip glitters from all natural ingredients. Both the boys and girls adored this project. One group of boys decided to make lip balms for their moms. This project was an innovative integration of chemistry, biology and engineering. The children took home the prototypes they had made.



Figure 4 Microscope Explorations at Camp 2000

To help tailor our programs to the unique needs of each of our partner organizations we created a set of experiments, projects and activities to meet the needs of younger children.



Figure 5. Children experimenting with volcanos at Cristy Recreation Center



Figure 6 Better Butter Program at Camp 2000



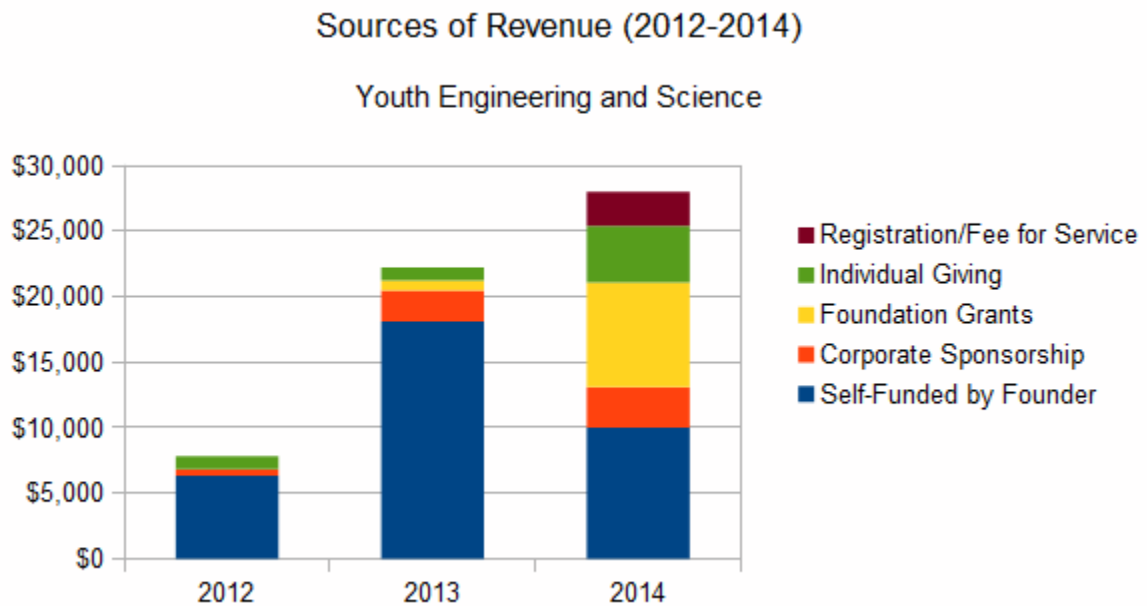
Figure 7 Experiments with mixtures at Sayre Recreation Center

Program Impacts

Because of the expansion of our programs this year, we are proud to report that there were 2,700 high quality hands-on science and engineering experiences had during our STEM for All Summer Program in 2014. For more information about Youth Engineering and Science and our programs from 2012, 2012 and earlier, visit our website at [http://: www.youthengineeringandscience.org](http://www.youthengineeringandscience.org)

Financial Summary 2012-2014.

Our program has grown in size and scope each year. To keep the organization financially sustainable, we are seeking to diversify the funding sources through the measured use of registration fees, fee-for-service programs, fund-raising events, foundation grants, and corporate sponsorships.



Our Work Needs Your Sustaining Support

To paraphrase Charles Dickens, these are the best of times and the worst of times for science, technology, engineering and mathematics (STEM) education. New technologies are enabling connected students to gain hands-on experience and access to cutting edge science and technology at an unprecedented level.

Yet at the same time, many students in less advantaged circumstances are being left ever further behind, with no access to meaningful STEM education, preventing them from being competitive in today's job market.

How can you help? Continue to partner with us to expand our program in Philadelphia!

Join us to help fulfill our mission for inspiring the youth of today to be the rising stars of tomorrow.