SOCIETY OF PHYSICS STUDENTS
An organization of the American Institute of Physics

Marsh White Award Report

Project Proposal Title	Lab For Kids
Name of School	Adelphi University
SPS Chapter Number	0020
Project Lead (name then email address)	Michael Fernez michaelfernez@mail.adelphi.edu
Total Amount Received from SPS	$300.00
Total Amount Expended from SPS	$295.00

Summary of Award Activities

Annually, our chapter at Adelphi University (0020) has the good fortune to work with Westbury High School and the Cradle of Aviation to promote the spirit of experimentation and physics education to students through a series interactive, informative, and fun physics-related projects and experiments. This year, with the help of our very dedicated members, we hosted a series of informal labs where students were asked to connect what they've learned in their physics classes to the supplies we had available including LED circuitsa Van de Graaf generator, an electric motor project, small lasers, and diffraction patterns of many shapes and sizes. We were invited to host this event again next year (and years to come) by the students' physics teacher and principal and received unanimously positive approval from the students.

Statement of Activity

Overview of Award Activity

Lab for Kids is an event we've done at Adelphi annually with our previous chapter director Sean Bentley. For this event, we invited students from Westbury High School to the local aerospace engineering museum The Cradle of Aviation for a day of exploring physics in a series of interactive labs and projects. Westbury High School is a bit of an anomaly since students have the option of taking physics in their freshmen year (when it is typically reserved to upper classmen). This year, we had over fifty students attend with sixteen of our own members supervising them.

The goal of this project was to share the vision of physics we have as students of the subject. That the study of physics is not only an incredibly powerful and useful tool, but also personally enriching and rewarding. Through a series of fun experiments, with some brief explanations on how they work and what they are used for, we offered a wholly new way to approach the study of science beyond textbooks and homework. The students had a wonderful time at our event, which was a welcome break from school and study. We were thanked personally by the students of each group as well as their teachers and principal (more details in the impact assessment).

Our event was organized into five stations that lasted about 30 minutes each so that each student had the opportunity to explore many areas of physics. These included:

- Optics Station—Using the SPS SOCK Kit, we provided students a wide variety of colorful experiments including small lasers, diffraction gratings, invisible ink, and optical fibers resulting in discussions about refraction, diffraction, and the exciting field of optics today
- Circuit station—Students had the chance to build and test their own circuits. After explaining the theory behind the wires, we supervised them as they build a simple circuit that lights a small LED
- Van de Graaf Station—A favorite among students and undergraduates, we offered high school students a look into the fascinating world of electrostatics in a "shocking" display. We invited the students to experiment with static electricity and told them a little bit more of what's happening behind the scenes
- Build your own electric motor—Part arts and crafts, part engineering, we taught students more about electric motors and how to build one using some common materials.

Impact Assement: How the Project/Activity/Event Promoted Interest in Physics

The project was aimed at giving students a perspective of physics as a real-world tool that manifests itself in the technologies around them. Why bother studying the equations that dictate the movement of charges, refraction of light, momentum, energy, etc.? Well, we use electricity to light the world, we use fiber optics to communicate, and momentum and energy. Science is nothing without it's experimenters. Our goal above all was to instill at the very least an appreciation for the value of experiment and learning through practice rather than theory. We wanted to demonstrate that physics has very useful (and very cool) applications that students can see right before their eyes.

We largely evalutaed our impact based on our conversations with the students and faculty. Despite hearing the students' mixed feelings about their classes and homework, their mindset about physics quickly changed from work to play. I happened to be leading the optics station and loved hearing the reaction I would get when the students found the diffraction glasses—revealing a world of color all around them. I explained how the glasses have a pattern of very small slits that separate the light they see into it's constiuent wavelengths, resulting the rainbow patterns they saw.

As with every group, I tried to find out who were the scientists among them, so I asked, "is anyone thinking of a career in the sciences?" Out of the blue, one girl in a Pink Floyd shirt suddenly replied "I am now!" I was stunned. But while this example is microcosmic, the reaction of most of the other students followed the same mood. Though they obviously won't all be scientists, it seemed our event at least translated some of the excitement I feel like when I'm doing experimental work and perhaps gave them a better respect and real-world connection to physics. A sense of play that is crucial to any great scientist.

Key Metrics and Reflection

Who was the target audience of your project?	**High school students**
How many attendees/participants were directly impacted by your project? Please describe them (for example "50 third grade students" or "25 families").	**50+ High School Freshmen**
How many students from your SPS chapter were involved in the activity, and in what capacity?	**16, 2-4 managing each station**
Was the amount of money you received from SPS sufficient to carry out the activities outlined in your proposal? Could you have used additional funding? If yes, how much would you have liked and how would the additional funding have augmented your activity?	**$300** **Our funding was adequate. The SOCK kit was an immense help**
Do you anticipate repeating this project/activity/event in the future, or having a follow-up project/activity/event? If yes, please describe.	**Absolutely, we consider this an annual event**
What new relationships did you build through this project?	**We have strengthened our relationship with the Principal and physics teacher at Westbury High School who both love having us hold this event**
If you were to do your project again, what would you do differently?	**Make better use of SPS' resources for public outreach (i.e. SOCK, etc.)**

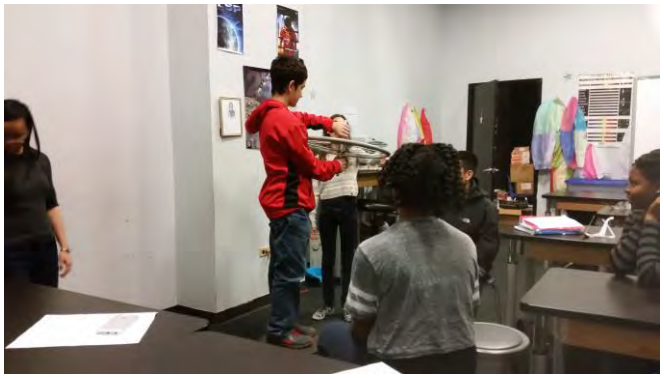
Expenditures

Please provide a brief explanation of your expenses. Include a written description of your expenditures below, those covered by your SPS funding and by other funding sources, and then fill in the table with the name and cost of each item purchased with your SPS funding. Add rows as needed.

Expenditure Table

Item	Please explain how this expense relates to your project as outlined in your proposal.	Cost
D-Batteries	Parts for the electric motor project	105.00
Insulated 22G Wire	"	40.00
Sewing needles	"	90.00
Modeling Clay	"	10.00
Electrical Tape	"	10.00
Small magnets	"	15.00
Hardware	"	10.00
Hobby Knives	"	15.00
	Total of Expenses	$295.00

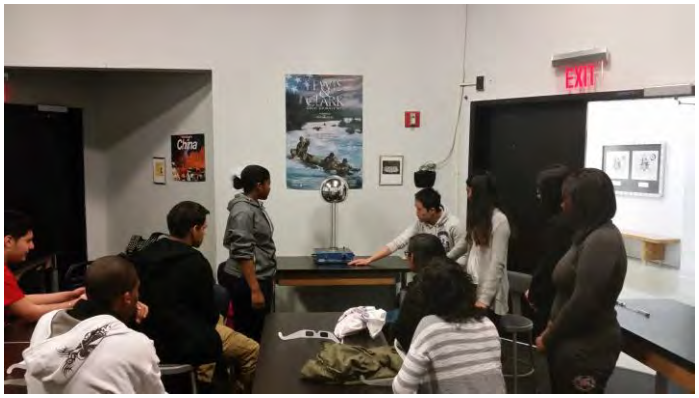
Activity Photos



Students trying to balance themselves using the momentum wheel *Photo Credit: Dr. Matthew Wright*

Chapter President Brian Kaufman helping students with circuitry *Photo Credit: Dr. Matthew Wright*

Chapter member, Youssef Saafan setting up his electric motor for testing *Photo Credit: Dr. Matthew Wright*



Chapter members running the Van de Graaf Generator *Photo Credit: Dr. Matthew Wright*

Students testing out laser and diffraction gear in the optics station *Photo Credit: Dr. Matthew Wright*