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

Marsh White Award Report Template

Project Proposal Title	Lab for Kids!
Name of School	Adelphi University
SPS Chapter Number	0020
Project Lead (name then email address)	Yuhao Qiao yuhaoqiao@mail.adelphi.edu
Total Amount Received from SPS	$300.00
Total Amount Expended from SPS	$ 256.88

Summary of Award Activities

Every year, our chapter at Adelphi University run the Lab for Kids in the Cradle of Aviation Museum, a hands-on experimental learning event in collaboration with tachers and students of Westbury High School. This year, our volunteers set up six stations: Van der Graff generator, spectroscopy, LED circuit, A.C. generator, aucostics and optics station. The event is as successful as the previous years and we were invited by Westbury High School to host the program again the coming year.

Statement of Activity

Overview of Award Activity

This project is an annual event where we collaborate with teachers and students of Westbury High School and organize a day of fun, interactive hands-on experiments for the students. The high school students from Westbury have the option to take physics classes in their freshman year, and thus already have some background in physics. Learning is facilitated by undergraduate volunteers from the Adelphi physics club. The event is divided into 6 stations, namely

- Optics
  - A well-designed flow of various experiments from SPS SOCK Kit 2015, using lasers, diffraction gratings, optical fibers and polarizers that the students have previously learnt in class.
- Spectroscopy
  - A short lecture that reviews Bohr's model and discrete energy level, followed by using discharge tubes of 6 different compositions.
- Static Electricity (Van der Graff)
  - The Van der Graff generator has always been a favorite among the students. Students had a lot of fun learning about static electricity while getting themselves 'shocked'.
- LED Circuit
  - With a brief explanation, we review the theory of circuits and demonstrate how to build one that lights up a light emitting diode. The students are then given materials to build their own.
- Build Your Own Motor (A.C. generator)
  - Probably the most challenging station, the making of an A.C. generator requires more patience and carefulness, but it is also the most rewarding the moment their coils start to spin.
- Acoustics
  - A new addition with the help of the 2016 SPS SOCK Kit. The students enjoyed learning about acoustics and making music from the various tubes.

The high school students were able to able to reconnect with what they learnt in class with real life through these experiments.

We aim to promote interest in and encourage further explorations of physics to high school students. This has been accomplished through the abovementioned stations, which are carefully tailored by their high school teacher and Adelphi's physics club to what they have learnt. The hands-on experiments helped the students to see the relevance of what they learnt, and therefore inspire them to purse a path in science. Our target audiences are 37 sophomore students from Westbury High School. A total of 13 SPS members from Adelphi University were involved from designing to the actual running of the stations.

Our chapter has been dedicated to spreading the fun and joy that one could obtain from learning physics, and that physics can be for anyone. Through this event and our conversations with the high school students, giving the high school students an insight from the student's perspective to college life and physics. I still remember from last year that, one girl exclaimed 'Finally a girl!' when she saw me. I am pleased to say that we had drawn a healthy balance of 7 male and 6 female volunteers this year.

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

The goal of our is to promote interest in physics and sciences in general via the various hands-on experiments that allow the students an insight into the value of science and what an rewarding experience it could be down the road. From our assessment, this is well accomplished. We have assessed our project based on our observations during the event, a holistic Adelphi event evaluation form and a debrief with the teachers-in-charge from Westbury High School, Mr. Brandon and Mrs. Trongone.

During the event, we have observed active questions and their strong interest prompted us to share even more in depth knowledge with them. For instance, at the spectroscopy station, our preparation involved explanation beyond discharge tubes and discrete energy levels. We were ourselves thrilled to find out that the high school students knew the fundamentals and switched to using the extra time to talk about black body radiation, red shift and blue shifts and they were used to identify the element composition of distant stars. It was extremely satisfying to see the 'shocked' look on the students face when they found out these amazing applications are based the very same things they learnt in class.

We have completed a holistic event evaluation from Adelphi University to assess the level of success from the number of attendance, reactions from the target audiences, and things we could improve on. We have reflected that the event is in general very successful judging from these criteria. We could however, improve on two things: firstly, it was unexpected that the museum was double booked on the day for Lab for Kids and we had to move our event to other locations in the museum. Secondly, this is the first time we had six stations. The time for each station were however unchanged. This meant that not every student would visit every station. We would instead combine some of the stations (such as optics and spectroscopy).

At the debrief at the end, their physics teacher Mr. Brandon and Mrs. Trongone congratulated us on yet another successful event and invited us back for the coming year.

Key Metrics and Reflection

Who was the target audience of your project?	**The target audience for Lab for Kids are the sophomore students of Westbury High School.**
How many attendees/participants were directly impacted by your project?	**37 high school sophomores participated, together with their teachers who facilitated the program.**
How many students from your SPS chapter were involved in the activity, and in what capacity?	**13 SPS members were involved in running the stations, an average of two members per 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?	**The amount received from SPS was enough to cover the entire operation. We could have used extra fundings to refine each station and give the students more take-away items e.g. a polarizer each since it seems to be their favorite.**
Do you anticipate repeating this project/activity/event in the future, or having a follow-up project/activity/event? If yes, please describe.	**Yes, we definitely plan to repeat the event next year. (see last question)**
What new relationships did you build through this project?	**We have built and maintained our excellent relationship with the principal and physics teacher of Westbury High School.**
If you were to do your project again, what would you do differently?	**We would double-check our booking with the Cradle of Aviation Museum since the day was double-booked and some experiments had to be moved to other rooms. We would also have fewer and better-planned stations since not every group had the chance to rotate around every station within the given time.**

Press Coverage (if applicable)

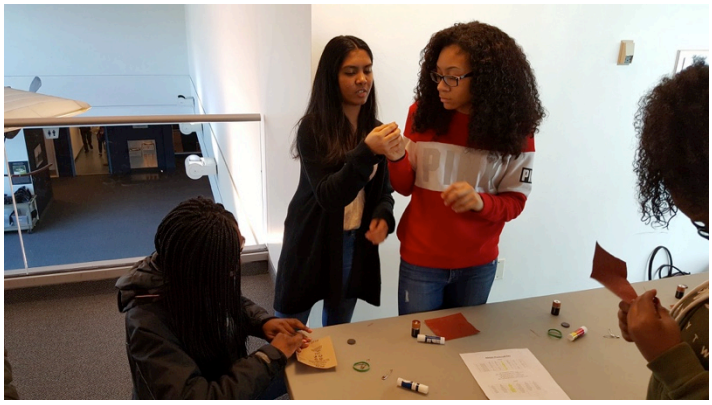
None.

Expenditures

Expenditure Table

Item	No.	Please explain how this expense relates to your project as outlined in your proposal.	Cost
Ceramic Disc Magnet(25 pcs)	4	Necessary as is used as materials in the making of A.C. motors	$ 35.96
Rubber bands (1 pound)	1		$ 13.14
Pins (40 pcs)	4		$ 19.96
Size C Battery (72pcs)	1		$ 99.99
AA Battery (20 pcs)	1	Used for LED circuits	$ 8.54
Tuning Fork Holder	1	Used for tuning fork demonstration in aucoustics station	$24.63
Total of Expenses (with tax and delivery)			$256.88

Activity Photos



Here, let me help you with your A.C. generator.
Photo Credit: Prof. Sean Bentley

Spectroscopy-ing
Photo Credit: Prof. Sean Bentley

Getting shocked by Van der Graff generator
Photo Credit: Prof. Sean Bentley

Making simple L.E.D. circuits under the plane
Photo Credit: Prof. Sean Bentley

If you have any questions, please contact the SPS National Office Staff
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