

Marsh White Award Report

Project Title: The Physics of Waves

School Name: The College at Brockport: SUNY

Project Lead: Amanda Landcastle (aland4@u.brockport.edu)

SPS Chapter Advisor: Trevor Johnson-Steigelman

Total Amount Received from SPS: \$296.80

Total Amount Expended from SPS: \$271

Summary of Award Activities:

The Physics of Waves is a high school presentation/demonstration which provides an exciting environment for students which would normally avoid Physics like the plague. We advertised the show weeks beforehand including a warning on the flyers stating "Persons diagnosed with epilepsy or severe asthma should not attend", which informed the student population of a very important warning message, but also worked as a draw for students. We opened the show by playing a mix of recent hits and having our purchased light show on as well as our fog machine. As students walked in they were handed a questionnaire as well as a pair of diffraction grating lenses to take home with them. The room was dark except the dancing lights, so the atmosphere was exciting right to begin with. The show was carried out in the dark with just the power point presentation to light the room. The entire audience participated in a stadium wave in the initial discussion of what waves were. We used sound pipes and "Boomwhackers" to show sound resonance and briefly explain the physics of resonance. We also used a blackbody spectrum light that the department had to show the students the cool effects of the diffraction grating lenses we had given them. We finished the show by explaining how the laser light show worked via diffraction gratings and mirrors. Overall, the show went great. We were slightly underprepared for how many people ended up attending, but we didn't complain. We ran out of our 150 pairs of diffraction glasses (!!!), and there wasn't enough seating. I guess our advertising worked! The questionnaire responses gave us a lot of insight into how the show went from the audience's perspective. We have been invited back to Brockport High School for future demonstrations.

Overall attendance: We believe that there were about 170 high school students in attendance, and several high school teachers.

SPS member involvement: Amanda Landcastle put together the presentation, but a total of 7 members showed up to help put on the show, as well as our advisor.

Notes on funding: The Marsh White Award money really helped to get the basics of the show funded. We could have done a lot more as far as fun demonstrations is we had slightly more funding.

Project repetition: We are already planning another show for a high school in New York, and we are organizing the materials we used so that future members can also put on a similar show.

Relationships: We were in contact with the Brockport High School physics department often, and they would like us to continue coming to do demonstrations. They told us that *they* would like to set up a standing arrangement with our SPS chapter.

What would we do differently: We *need* to be more organized and ready for whatever snags come our way. Some of the demonstrations weren't carried out perfectly, and this will have to be corrected for future shows.

Expenditures:

Item	Cost
Chauvet Hurricane Machine	\$50
American Dj Supply Lighting	\$100
3 of "3D Firework Glasses"	\$27
1 Gallon Techno Fog – Fog Machine Fluid	\$20
4 Pack Sound Pipes	\$18
Boomwhackers Power Pack	\$36
Tax	~\$20
Total	\$271

Impact notes:

The questionnaire asked the following:

- 1) Did you learn something today? Yes, No, Maybe
- 2) When we come back, which presentation(s) would you like us to put on?
 - a. Physics of Toys
 - b. Physics of Angry Birds
 - c. Physics of Parkour
 - d. Physics of Star Wars
 - e. Physics of Sports
 - f. More in-depth Physics of Music
 - g. More in-depth Physics of Light
 - h. Other: _____

Also on the questionnaire, the students supplied their current grade in high school. We had a span of all grades 9-12. From the 70 that were turned in to us, only 8 said they didn't learn anything. One student put "maybe", and the rest answered "yes". We had one "Other" demo of centripetal motion. The majority of students wanted us to come back and put on Physics of Parkour, Physics of Star Wars, and More in-depth Physics of Music/Light.

From the responses we received, we think that the show made an impact on the students. We are looking forward to continuing our work trying to get students that would normally not like physics to attend fun and interesting *physics* presentations.