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

Marsh White Award Report Template

Project Proposal Title	Demos in the Sun: The Oobleck Experience
Name of School	College of William and Mary
SPS Chapter Number	8226
Project Lead (name then email address)	Brandon Buncher bmbuncher@email.wm.edu
Additional Project Leads (two lists: names then emails)	Stephanie Wang slwang@email.wm.edu Scott Mundy scmundy@email.wm.edu
SPS Chapter Advisor	Dr. Irina Novikova
Total Amount Received from SPS	$200.00
Total Amount Expended from SPS	$197.80

Summary of Award Activities

Every spring semester, the College of William and Mary SPS chapter hosts Demos in the Sun, an event in which we perform physics demonstrations and give out liquid nitrogen ice cream to our college community to demonstrate the phun in physics. Our main demonstration consists of a pool of oobleck, a non-Newtonian, slime-like fluid that can be run across. Previously, we used a plastic baby pool to hold the oobleck; however, this year, we decided to design and construct a larger, sturdier pool using oak wood. The event was a huge success, and the new pool seems to be strong enough to be used for years to come.

Statement of Activity

Overview of Award Activity

We designed and built a 7' x 2' x 1' pool with which to hold oobleck (a non-Newtonian fluid composed of corn starch and water). The pool was then used at our annual "Demos in the Sun" event, at which we perform physics demonstrations and give out liquid nitrogen ice cream at the quad of our university. There, we filled the pool with approximately 400 pounds of oobleck and allowed students to run across the pool and play with the oobleck. We also had a trebuchet, dry ice demonstrations, Diet Coke and Mentos, and more! The project accomplished its goal of providing a fun, interactive physics demonstration that is enjoyable for college students. It successfully showed many that physics is fun and not just boring equations! Between 200 and 300 people attended the event, most of whom were students of the college, though several professors and members of the surrounding community also participated. The project greatly enabled our chapter to complete outreach opportunities, a key component of our chapter's mission. In the coming fall, we plan to host our annual "Physicsfest" event, in which we perform physics demonstrations and serve liquid nitrogen ice cream to the college and surrounding community. Previously, we have used a plastic baby pool for this event, and though this setup was not optimal, it was the most popular demonstration. With the new pool, we anticipate bringing even more joy to the people who stop by.

When initially purchasing the oak boards to construct the pool with, we asked for the boards to be cut to the proper length. However, when we began the construction stage, we found that the boards were not quite aligned. Lacking power tools, we had to use a hand saw to cut through two feet of 1.5-inch thick oak wood and four feet of plywood. To add to this, we soon found that the only saw blades we had available were to be used for cutting metal! Not wanting that week's meeting time to go to waste, we decided to tough it out and cut the wood using the metal saw. We created "Team Saw," a group of about five students who took turns sawing wood with the inefficient saw, then making jokes about how "easy" it was to do. Over the course of several hours, Team Saw developed a great deal of cohesiveness and camaraderie. Throughout the rest of the year, whenever we would break off the teams for any reason, someone would inevitably yell "Team Saw," followed by a chorus of the other members of Team Saw repeating the mantra. We hope that "Team Saw" will stay with our SPS chapter for years to come!

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

The project goals were to:

1. Develop interest in physics through an interactive demonstration
2. Teach others about physics
3. Show others that "physics is phun!"
4. Create a pool that will not require replacement for a great deal of time in order to continue this demonstration for years to come

In order to bring physics to the community, we hoped to use an interactive demonstration. Participants could run across the pool and play with the oobleck while learning about non-Newtonian fluids in the process. The demonstration was successful in achieving these goals, as several hundred students played in the pool and enjoyed the rest of the event. Many students commented that they did not realize that

physics was actually this fun! The structural integrity of the pool was also excellent. When initially making the oobleck, we worried that the strain on the pool would be too great, even given the strength of the wood used. However, the pool left the event in the same condition it arrived in, with no cracks or water damage!

In addition to the oobleck pool itself, the rest of the demonstrations were highly successful. Several years ago, our chapter constructed a catapult, which unfortunately fell into disrepair over the years. The catapult was fixed, and was very popular at the event! Another successful demonstration was dry ice experiments. We made fizzy apple juice, self-inflating balloons, and smoke bubbles using dry ice, all of which were extremely popular. Diet Coke and mentos fountains, liquid nitrogen ice cream, homemade bubbles, and stomp rockets were also extremely popular. These demonstrations brought physics to life, enabling many who were initially unenthused with the subject to enjoy it. In addition, the demonstrations attracted several professors. One professor, who works in the marine science department, enjoyed the demonstrations so much that he invited the chapter to take a tour of his department! In all regards, the event was highly successful, and all goals we began the event with were achieved!

Key Metrics and Reflection

Who was the target audience of your project?	Everyone within and outside the college community
How many attendees/participants were directly impacted by your project? Please describe them (for example "50 third grade students" or "25 families").	200-300 college students, 20-30 adults and families
How many students from your SPS chapter were involved in the activity, and in what capacity?	10 helped build the pool, 15 helped set up and run the event
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?	It was sufficient
Do you anticipate repeating this project/activity/event in the future, or having a follow-up project/activity/event? If yes, please describe.	We aim to repeat this event annually. In addition, we will likely utilize this demonstration at other outreach events
What new relationships did you build through this project?	We developed greater friendship among those in the chapter, especially among "Team Saw." In addition, we developed connections with several professors, one of whom plans to develop an increased relationship with our chapter in the future.
If you were to do your project again, what would you do differently?	Obtain a circular saw

Expenditures

Expenditure Table

Item	Cost
Lumber crossbars	6.34
10’ oak boards	24.98
2’ oak boards	16.32
4’ x 8’ plywood	21.78
Corner braces	35.76
Screws	13.16
Drill bits	19.97
Oak dowels	6.23
Eye bolts	1.98
Denim fabric	8.89
Pull saw	19.95
Grommet kit	10.99
Leather	9.95
Total of Expenses	197.80 (including tax)

In the event that receipts are required for proof of purchase, please email Brandon Buncher.

Activity Photos

All photos by Brandon Buncher

Figure 1: The construction of the oobleck pool.

Figure 2: A member of the illustrious “Team Saw” with a newly-acquired wood saw.

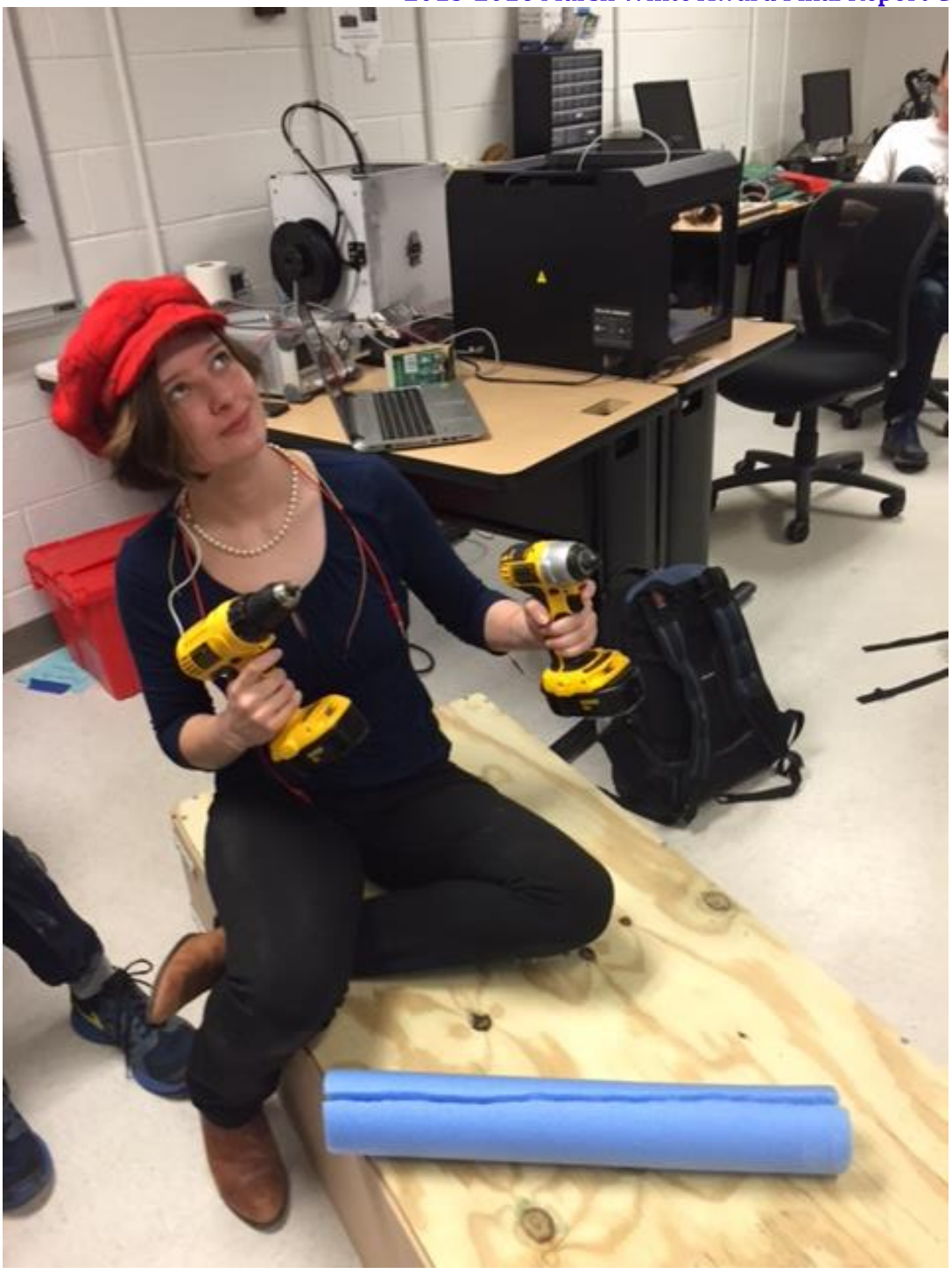

Figure 3: Hard at work!

Figure 4: The completed oobleck pool.

Figure 5: Most of the building team.

Figure 6: The beginning of Demos in the Sun

Figure 7: A student running across the pool.

Figure 8: Most of the Demos in the Sun event team.

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