



SOCIETY OF PHYSICS STUDENTS

An organization of the American Institute of Physics

Marsh W. White Award Proposal

Project Proposal Title	Physics is Phantastic Phunshop
Name of School	University of Wisconsin Platteville
SPS Chapter Number	8316
Total Amount Requested	300

Abstract

The Society of Physics Students at the University of Wisconsin Platteville, will be hosting their annual 'Physics is Phantastic Phunshop' in late October. This event invites 5th and 6th grade students from local schools to participate in physics related fun, to support interest in the field of physics.

Proposal Statement

The entire Proposal Statement should be no more than 2 pages, and organized as follows.

Overview of Proposed Project/Activity/Event

Near the end of October or beginning of November the Society of Physics Students at the University of Wisconsin Platteville will be hosting a 'Physics is Phantastic Phunshop'. Phunshop is a chance to do outreach to the community while stimulating interest in physics to younger students. Phunshop targets 5th and 6th grade students from 25 local schools; there are no requirements for a student to attend the event, and parents are welcome to join. The Phunshop is a free event to everyone wishing to attend; also, T-shirts are given out to all participants. The turnout for this event varies year to year anywhere between 25 and 50 people. The event includes a series of fun physics demonstrations designed to grab the students attention, along with a construction period where the students are able to design an object using the concepts we have taught them in the demonstration portion. Phunshop was created by our chapter many years ago, because our chapter decided we wanted to do at least one large community outreach every year. Our goals in hosting this event are to give the students an opportunity to learn about physics in a fun atmosphere, while promoting the entire STEM program. Every Phunshop is centered on a theme. The upcoming Phunshop will have the theme of pressure.

How Proposed Activity Promotes Interest in Physics

This event has always been to promote interest in physics to the students who attend. Our objective is to start interest in physics at a younger age so that the students can continuously work toward a career or lifelong hobby in the science. Our belief is that the probability of cultivating interest in any subject becomes harder and harder as the student grows older. This is why we have designed our Phunshop in a way to catch the student's curiosity at an age where they are old enough to understand the concepts we talk about, but not too old where they become bored and disinterested. This goal is accomplished by performing demonstrations to the students which they may have never seen before, then giving a 5 to 10 minute talk on why or how that demonstration works and relates to the theme. For example, most of the adult world has seen, or experienced, liquid nitrogen, and to them it lacks a certain "WOW" factor. However, to a 5th grade student the thought of a liquid being so cold that you are able to shatter a racket ball or shrink a fully inflated balloon down to its original size seems almost magical. This Magic aspect is what we work off of to promote physics in the students. Some examples of demonstrations we plan to use for next year's Phunshop are: making bubbles with dry ice, shooting a ping pong ball out of a vacuum cannon, demonstrating Heron's Fountain, lying on a bed of nails. By capturing the attention of the students with these demonstrations an interest in physics is bound to develop.

Plan for Carrying Out Proposed Project/Activity/Event

Phunshop is prepared and planned by a committee assembled several months before the event is to take place. Due to the magnitude of the project the president of the chapter is the head of this Phunshop committee. When the committee is first formed a Gantt chart is created outlining the stages of Phunshop, and when each stage needs to be completed. For example, the largest method of marketing we implement is through informational packets containing flyers, permission slips, and directions. These need to be sent to the local schools 4 weeks before the event is planned to take place. This milestone is clearly marked on our Gantt chart.

On the day of the event all the members of the committee are expected to help out, along with any volunteers from the rest of our chapter. This event requires ten members from our chapter to participate in a variety of tasks. On the day of the event members will be needed to run the registration table, perform demonstrations, and explain to students how the demonstrations work, prepare food for the students, help the students during the construction period, and clean up. For our grand finale we will be launching a model rocket, this requires the expertise of our chapter's rocketry group. They will be put in charge of gathering and preparing all the supplies needed for this rocket launch, and they will also be the ones to launch the rocket. This is because some of them have attended conferences and training sessions on the laws and procedures on larger scale rockets.

Project/Activity/Event Timeline

Below is our tentative itinerary of what the Phunshop will look like. The finalized schedule will be formed sometime in May in order to give the committee several months before the event. Other milestones for planning this event include:

- | <ul style="list-style-type: none"> • Plan construction project – End of May • Plan – September • Send packets One Month event • Plan for the One Month event • Gather construction Month prior • Call schools they received Two weeks event • Practice demonstrations- One week before the event, then again the day before. | <table border="1" style="margin: auto; border-collapse: collapse;"> <tr> <th colspan="2" style="background-color: #4a7ebb; color: white; padding: 5px;">Schedule of Events</th> </tr> <tr> <td style="background-color: #d9e1f2; padding: 5px;">8:00 AM</td> <td style="background-color: #d9e1f2; padding: 5px;">Registration</td> </tr> </table> | Schedule of Events | | 8:00 AM | Registration | <ul style="list-style-type: none"> demonstration 10th to schools – prior to the food needed – prior to the supplies for project – One to the event to confirm the packet – before the |
|---|---|--------------------|--|----------------|--------------|--|
| Schedule of Events | | | | | | |
| 8:00 AM | Registration | | | | | |

9:00 AM	Demonstration #1
10:00 AM	Break Time - with snacks
10:15 AM	Construct Propulsion Boats
11:30 AM	Pizza Lunch
12:15 PM	Demonstration #2
1:30 PM	Finale w/Rocket Launch

After registration the first set of physics demonstrations will begin, and they will last an hour at which point the students will grab a snack then start on their construction project. This upcoming year's construction project will be boats powered by pressure. Lunch follows the construction period. This gives the students time to talk amongst themselves, and interact with the SPS students running the event. A second round of demonstration is after lunch with the grand finale of a rocket launch. The entire event will last just over 7 hours.

Activity Evaluation Plan

After the event is completed the committee which planned the event will gather to talk about how the event went, and how it could be run better for the following year. We will judge our success based off of how many students attended the event, feedback from the volunteers, and feedback from the students during the event. The feedback from the students will be an accurate and important measure. Toward the end of the day when the students are waiting for their parents to come and pick them up we will have our volunteers interact with the students and talk to them on things they really enjoyed, and things they thought were not interesting. From this feedback we will be able to conclude which aspects of the event should not be repeated, or which aspects we can expand on. From past years we have discovered our best and most accurate evaluation method is based on how many questions the students ask. When students are constantly raising their hands, and asking "Why does that work?" or "How can I do this at home?" We know that the students are genuinely interested. Although this method is not formal and doesn't return any physical numbers, we have found it to be our most useful method.

Budget Justification

This budget was created with most of the necessary supplies. Some less important supplies were left out due to the fact the 300 dollar limit was already exceeded. It is understood that this budget exceeds the 300

dollars that the Marsh White Award is allowed to allocate. With this said, our chapter loves to put on this event and we have done so for many years, and any cost that exceeds the 300 dollar limitation our chapter fundraises or gets donations from alumni. Also, there is no cost for the demonstrations, because the Engineering Physics department is kind enough to allow us to use all of the demonstrations they use in the general physics classes.

Justifications:

Sheet of Polycarbonate: This material will be used to have the students design and construct their boats. Polycarbonate is needed because of its material properties. It is easily cut, yet extraordinarily strong and light for the size. Students will be able to form their boats to their desires. Building these boats will give them an object they can take home with them. This will encourage physics not only in the classroom, but also at home, nourishing an interest in the subject.

Plungers: The plungers listed in the budget refer to the large syringes used for livestock. These plungers were used because students can clearly see how the water inside of them can be pressurized, which will be the source of the propulsion of their boats.

Pizza, Milk, Juice, Cups, and Napkins: These materials will make the students day happier. They will then associate this happiness and the fun day they had with physics. Now physics isn't a scary hard thing, but something fun that they can enjoy doing.