



# SOCIETY OF PHYSICS STUDENTS

An organization of the American Institute of Physics

## Marsh W. White Award Proposal

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Project Proposal Title	Elementary Physics Videos
Name of School	Texas State University
SPS Chapter Number	6682
Total Amount Requested	\$220

### Abstract

We hope to produce education video demonstrations for use at our local elementary school.

# Proposal Statement

## Overview of Proposed Project/Activity/Event

Our project will be starting a library of video demonstrations for our local elementary school, Travis Elementary. Our local SPS chapter will perform and film various demonstrations in an inquiry based teaching style which will be uploaded to our YouTube channel. We are aiming to do larger demonstrations that the teachers are unable to fund or unable to safely perform at the elementary school. A long term goal of the project would be to develop a cohesive collection of videos that build on physics and science concepts.

For our first videos we selected demonstrations that show the students the effects of pressure and properties of different gases. To show the effects of pressure we want to provide a video demonstration of imploding a 55 gallon metal drum. This involves boiling water in the drum then rapidly cooling the drum. The change in pressure inside of the drum causes it to rapidly implode. In order to demonstrate different properties of gases we plan to do various activities with sulphur hexafluoride, argon, krypton, and helium. These activities involve filling balloons with each gas and letting them go as well as floating a tinfoil boat on sulphur hexafluoride. Floating a boat on sulphur hexafluoride is very cool! It gives the appearance of the boat floating in midair.

We hope that these videos can be used at Travis Elementary as a teaching resource for science instruction. The videos will also serve to get the children excited about the exciting world of science. We have been in touch with a teacher at Travis Elementary and provided with the 4th and 5th grade science curricula. We hope to gear the videos toward their specific curriculum so that they can be integrated into the classroom with ease.

The motivation behind this project was to help local STEM instructors by providing them teaching resources. We also want to get children excited about the fun and interesting things science has to offer. We feel that videos made by local Texas State University students will help the elementary students' sense of community as well.

## How Proposed Activity Promotes Interest in Physics

Working with younger, 4th and 5th grade, students we hope to make a lasting impression with our videos. By making videos of larger scale demonstrations, using supplies that are unavailable to most teachers, and using an inquiry based teaching style we hope to instill the kids with a sense of curiosity and wonder about the physical world.

## Plan for Carrying Out Proposed Project/Activity/Event

A chair for the activity will be elected from our current SPS members. The chair of the activity will be responsible for planning the activity, delegating tasks, monitoring progress, and communicating with teachers at Travis Elementary. The chapter advisor will oversee the activity chair. We have already been in contact with an instructor liaison from Travis Elementary about what types of videos they would be able to use in the classroom. By working directly with teachers from Travis Elementary we hope that our demonstrations will be used in the 4th and 5th grade science classrooms.

We have already discussed involvement and participation with our local SPS chapter. We hope that everyone interested in making the video participates. We are not limiting involvement to SPS members. We are fortunate to have faculty at Texas State University who are active in physics education research that we can use as resources for refining or demonstration instruction. Also, we have faculty who are experienced working with the different materials and gases as well as video production.

## Project/Activity/Event Timeline

The video demonstrations have already been loosely planned. We have spoken with a teacher at Travis Elementary about the types of videos they would be able to use and are interested in. We plan to have the videos completed by the start of 4th and 5th grade, August 2014. Once we have the funding for the supplies we would need to purchase the supplies, train those involved with performing the demonstrations, write a script, and then film the demonstrations. All post-production work will be handled by a faculty member with experience in video editing.

## Activity Evaluation Plan

We plan on gauging the success of our initial videos by getting feedback from the instructors and students at Travis Elementary. Since the videos will be made for them we can speak with them about their and the students' reactions to the videos. We can also work with them directly to improve the video content and structure.

## Budget Justification

All of the items listed in our budget are supplies essential to the demonstrations. The cinder blocks will be used to stand the drum up while a fire below it is used to heat it. The kiddie pool and ice will be used to rapidly cool the heated drum. The glass aquarium will be filled with dense gases in order to float the tinfoil boat. Most of the more expensive or rare supplies we have on hand at Texas State University and can borrow. The lab coats would be used as costuming in the videos. Scientists have to work in lab coats!