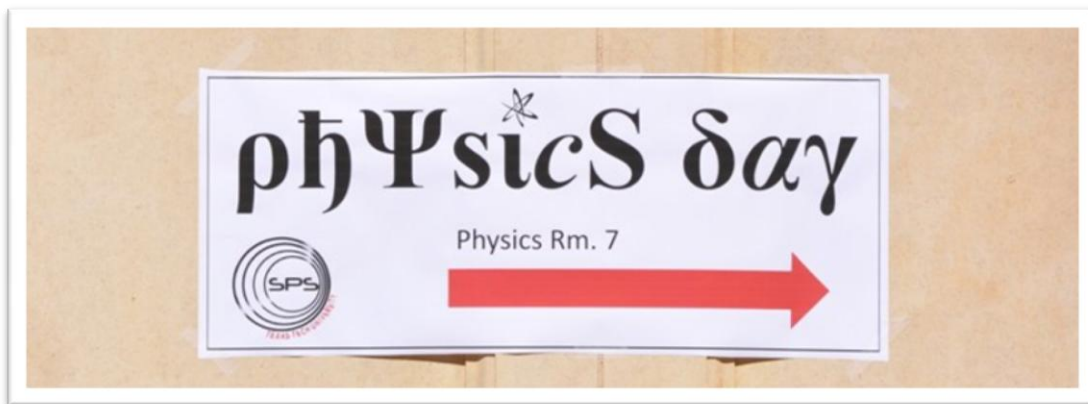


Marsh White Award Report for Texas Tech University's

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on May 20th, 2010

Texas Tech University's Society of Physics Students Chapter is happy to report a successful turn out to their proposed outreach event. The Physics Day event was geared specifically toward younger audiences in that hoped to awe, inspire, and expose them to the brilliant world of physics through the performance of visually stunning physics experiments and participation in a hands-on educational experience. Our event would not have been such a success without the financial aid received in the form of the White March Award, for which we are very thankful. It would be an injustice to any organization reading this report if we only discuss things that went well, and thus, we find that it would be much more profitable to the readers if we instead dedicated a section to some of the more difficult aspects of hosting an outreach event and how we came about solving them.

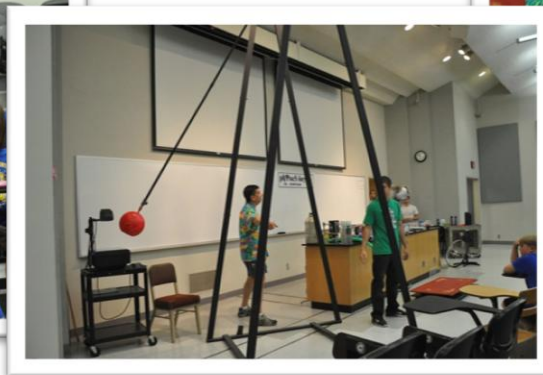


Physics Day Outline

We had a group of fifty 5th grade students attend our event. To commence the fun-filled day of physics that is “Physics Day”, one of Texas Tech University’s professors performed the more explosive and adult-supervision-requiring experiments in a routine called the Physics Circus, all the while explaining the physics behind the flamboyant experiments and answering audience questions. This performance was a good way to catch an audience’s attention and get them excited for what is to follow in the day.



The Physics Circus will run from up to an hour, after which the audience will be divided into three groups. Each group attended a different workshop where they had the opportunity to work with different physics experiments of a certain subject. The workshops are optics, energy, and statics.



The optics group worked with optics kits comprised of a lamp that emitted a striped, collimated beam of light on table, and specially designed plastic lenses that reflected, refracted, and inverted the rays. The students were thereby able to see the optical properties present in every-day life, such as the way the human eye works and the need for glasses, the reason why a fish is never where it seems to be (refraction), and the vary basic nature of light.



The energy group observed the effects of the conservation laws by experimenting with flexible tubing and marbles, and got to experiment with the physics that makes roller coasters work. The students were asked to investigate the effects of a marble's speed depending on the slope of the tubing, and the conservation of energy (as measured by the impact of the marble on a stationary object).



Finally, the statics group worked with a home-made kit of weights and levers to determine the effects of the placement of the fulcrum and the mass had on objects equilibrium. These experiments gave new insight to the properties that make a crane work efficiently, and why opening a door is easier if you push near the edge. The groups were asked to rotate activities at 20 minute intervals. The advantage of using such experiments is that they are easy to describe and perform, give instantaneous results, are relevant in daily-life, and require hands-on participation (which really motivates the kids).



Difficulties

Setting a good date was the most difficult aspect of the Physics Day preparation for not only does the date have to be acceptable for the SPS volunteers, but also for the K-12 students that will be participating. We did not consider the latter and as a result ended up scheduling Physics Day during 5th grade TAKS week and as a result had zero attendance. We rescheduled the event to be held on May 20th, that is, after college finals but before the elementary school's summer break. . Given such an awkward date, we found ourselves with few volunteers to carry out our Physics Day event, but were able to get help from graduate students.

A closer look at the surrounding weeks revealed that any week in late April or early May are bad weeks to try and host an outreach event. During that period college students are starting to prepare for finals and are already committed to other end-of-year events (such as banquets) and cannot volunteer their help. All the while elementary, middle, and high school students are finishing up sports seasons and taking TAKS tests. We thus conclude that an outreach event can be more easily scheduled during the fall (before finals) or early spring semesters.

We were very ambitious in our planning for Physics Day and wanted to get as many kids as possible to come. By the suggestion of our advisor (which we are now very thankful for), we limited the number of participants to fifty 5th graders. We can now see why low numbers were insisted upon and highly encourage any other SPS organization to consider the ratio of college students to elementary school students. We had 3 SPS volunteers (all others went home for the summer), 2 graduate volunteers, and 3 professors to help; the professors acted as chaperones and the students led the hands-on lab. We were only barely able to keep the 5th grade horde under control (who could blame them for being so excited about physics), and would recommend having one supervising adult/college student for every four 5th grade students. Such a set-up will give every student as specialized attention as possible.

Conclusion

In the end, Physics Day was a success! We are already brainstorming ways we can build up Physics Day, and since most of the items purchased with the Marsh White Award are reusable, we are sure to have fun experiments for the participating students next time around. Additional pictures can be found at

http://www.phys.ttu.edu/~slee/SPS/PhysicsDay_2010/2010_Physics_Day.html