

April 14, 2006

Society of Physics Students  
Blake Lilly Prize Committee  
One Physics Ellipse  
College Park, MD 20740-3843

Dear Blake Lilly Prize Selection Committee,

Our SPS outreach program at Ball State University involves school visits to middle and high schools in the Delaware County area of Indiana. At these school visits we perform interactive demonstrations for the students. We have also participated in the Indiana State Fair this past summer, and will participate in interactive demonstrations with visitors to the International Science and Engineering this May.

It is surprising how few students mention any kind of science as possible career choices. Often these students say that they think science is boring, especially physics. This kind of response is exactly why our outreach program exists. Our main objective in teaching these students is to show these kids that physics and science as a whole are really fun and cool.

Each semester we go to schools in groups of three or four. While at the school we perform demos for two or three sections of students. This semester we visited two middle schools and high school. With 20-30 students per section we estimate to have done our demonstrations for nearly 500 students this semester. Without the Marsh White award that we used this semester to fund our optics demonstrations our outreach program would have significantly less impact.

The demonstrations we perform are primarily in the area of optics and mechanics. A favorite demo among the students is the CO<sub>2</sub> car, which is used to demonstrate Newton's Third Law with the younger students, and conservation of linear momentum with the more advanced classes. This usually evokes much excitement and many questions.

Another popular demonstration is in our optics section, "the laser and the bucket". This demo demonstrates total internal reflection as a laser follows a stream of water out of a bucket and in to a pail. This is particularly enjoyable because we ask the students to hypothesize what will happen before we perform it, and many students are surprised that their hypothesis wasn't correct, and this evokes even more questions. We usually follow this demo with some discussion about how the concepts apply to fiber optics. By observing what questions are asked by the students and the inquisitive looks on their faces, we conclude that our program is, indeed, affecting some positive change on students' attitude towards physics and science as a whole.

At the State Fair last summer and at the Engineering Fair this summer we have a booth where we do many of the same demos. Many of the same physics demonstrations used in the classroom can be performed at the other outreach opportunities, such as the State Fair, last summer, and the ISEF, coming soon. Others are reserved for the general public, such as using liquid nitrogen. Many people are amazed at the effects of low temperature on materials. These opportunities are especially fun because we get to share our enthusiasm for physics and learn from the others.

Enclosed are photos from some of these school visits, which indicate how the students are learning about science. Our outreach program here at Ball State University is, and continues to be, dedicated to inspiring young minds to pursue interests in physics, and science as a whole. Perhaps one day these same minds will pursue a career in science.

Sincerely,  
Ball State SPS Chapter

